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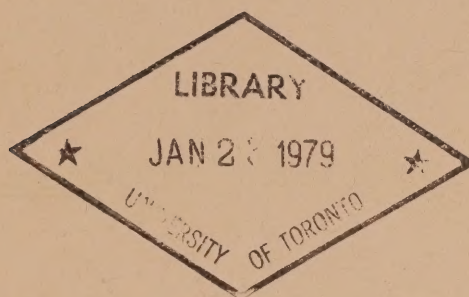






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**PASSIVE RADIOMETRY OF THE OCEAN  
WORKING GROUP REPORTS ★ ★**



**J.F.R. Gower, Editor**

**INSTITUTE OF OCEAN SCIENCES, PATRICIA BAY  
Sidney, B.C.**



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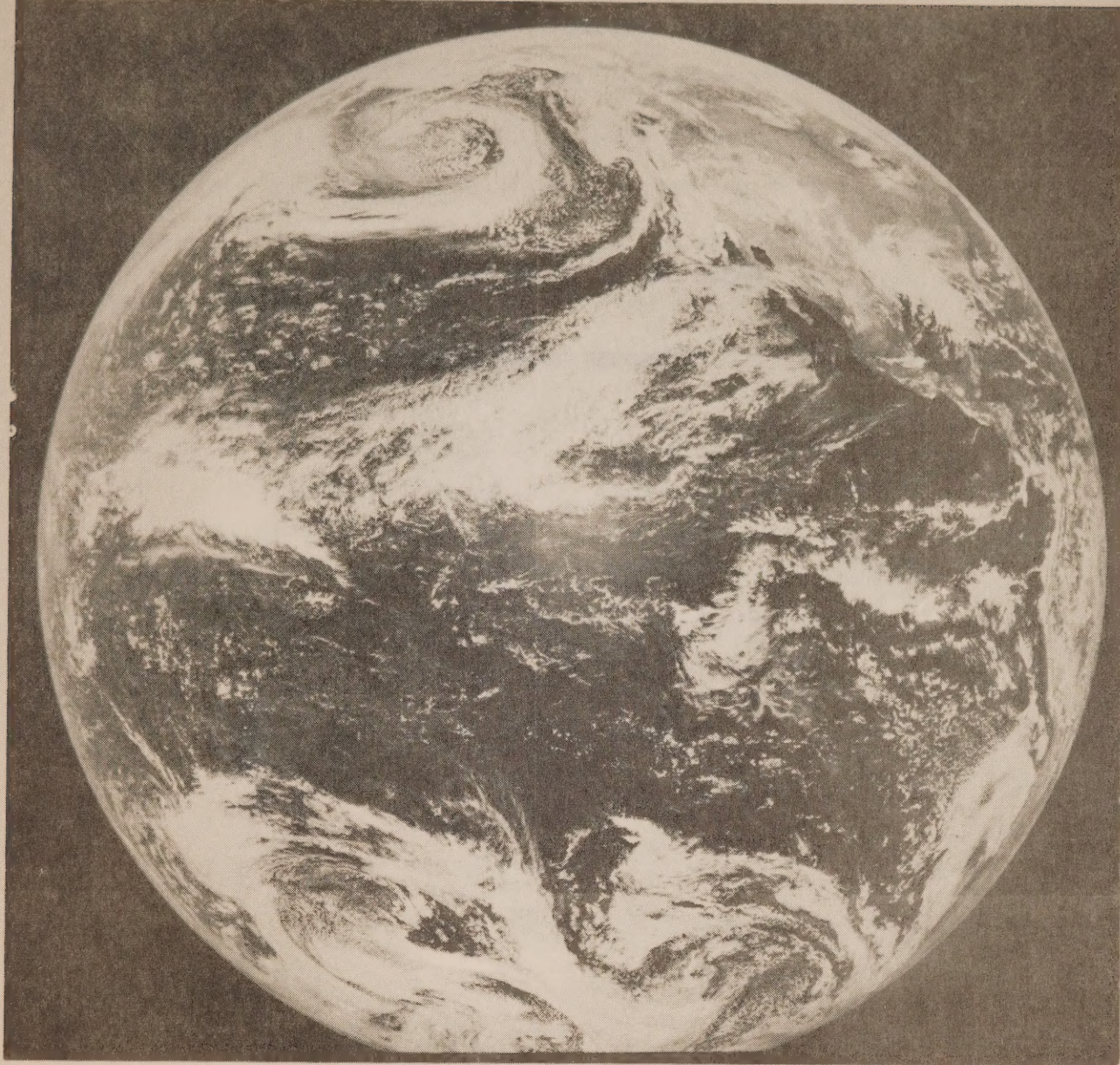
Summaries of proceedings, conclusions and recommendations  
from the IUCRM Colloquium held at the Institute of Ocean  
Sciences, Patricia Bay, June 14-21, 1978.

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The Eastern Pacific Ocean From Space

This image from the synchronous satellite GOES-2 shows the eastern Pacific Ocean at near local noon on April 5, 1976. North and South America are visible at the right hand edge of the earth's disc, with the Gulf of Alaska and the Aleutian Island chain visible at the top centre. A patch of sun glitter can be seen on the ocean in the centre of the disc. The widespread patchy cloud and haze cover illustrates the problem of atmospheric effects on measurements made through the atmosphere from space. The image was used as an identifying symbol for the IUCRM Colloquium.







PASSIVE RADIOMETRY OF THE OCEAN

WORKING GROUP REPORTS\*\*

J.F.R. Gower, Editor

Institute of Ocean Sciences, Patricia Bay

Sidney, B.C.

1978

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## ABSTRACT

The IUCRM Colloquium on Passive Radiometry of the Ocean was held at the Institute of Ocean Sciences, Patricia Bay, June 14-21, 1978. The meeting included presentation of papers and working group discussions covering microwave radiometry, thermal radiometry and imagery, and measurements of water colour. This report summarizes the formal and informal sessions, and gives the conclusions and recommendations arrived at in the 3 above fields.

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## INTRODUCTION

The Colloquium on "Passive Radiometry of the Ocean" was planned by the IUCRM (Inter Union Commission on Radio Meteorology) to discuss the present state of this area of remote sensing. The topic includes the use of satellite and aircraft imagery in the visible, infrared and microwave regions of the electromagnetic spectrum, as well as more quantitative measurements that produce spectra rather than images.

The Colloquium program involved participants first in a three-day formal conference and then in a further three days of panel discussions during which reports and recommendations were produced. Attendance was by invitation, and all participants were expected to contribute to both parts of the program.

Titles of papers presented in the first three days are listed in the next section. Sessions covered microwave, infrared and visible imagery, with most of a day devoted to measurements of water colour. The panel discussions centred on these three topics with three working groups each presenting a report with recommendations based on their work.

This document presents the three resulting reports. The different formats reflect variations in the atmosphere of each group's discussions. The microwave group were first to present their conclusions for joint discussion by the Colloquium, followed by the "thermal radiometry and imagery" group. Both these groups were informally constituted and no list of contributors is given. The water colour group was united largely by a strong and urgent interest in the coming launch of Nimbus G and its Coastal Zone Colour Scanner, resulting in the most detailed report of the three. All three groups had stimulating discussions in this second phase of the meeting and participants concluded that this meeting format was an extremely valuable one.

In order to make the results of these discussions available as quickly as possible, they are produced here as a Pacific Marine Science Report of the Institute of Ocean Sciences, Patricia Bay. All comments or feedback should be either to the editor or to the working group chairman listed at the start of each section. Some recommendations are for future research work, and delegates agreed to bring these to the attention of national research funding agencies.

The full proceedings of the meeting, including texts of presented papers will appear in the journal "Boundary Layer Meteorology".





IUCRM Colloquium June 14-21, 1978  
 Institute of Ocean Sciences, Patricia Bay, Sidney, B.C. Canada

PROGRAM

Wednesday, June 14, 1978

Morning      Opening and General Reviews      Chairman J. Gower

Organizational Details - Program Chairman

Welcome      Dr. R.W. Stewart, Director  
                  Institute of Ocean Sciences, Patricia Bay

1978 - The Year of the Oceanographic Satellites - J. Apel NOAA/NESS  
                  Seattle, Washington USA

Passive Radiometry of the Ocean from Space - An Overview -  
                  E.P. McClain, NOAA/NESS, Washington, D.C. USA

Afternoon      Introductory Papers      Chairman J. Gower

Atmospheric corrections to passive microwave observations of the  
                  ocean (Review paper) - T. Wilheit, NASA Goddard, USA

Optical remote sensing of sea surface roughness (Review paper) -  
                  W. Keller, Naval Research Laboratory, Washington, D.C.  
                  USA

The Nimbus G Coastal Zone Color Scanner Program - W. Hovis,  
                  NASA Goddard, USA (presented by H. Gordon)

An advanced ocean color scanner system - H. Kim, NASA Goddard,  
                  USA

Thursday, June 15, 1978

Morning      Microwaves      Chairman C. Swift  
 (first  
 part)

Passive Microwave Techniques (Review paper) - C. Swift, NASA  
                  Langley, U.S.A.

Microwave emissivity of the ocean and its relation to the marine  
                  wind field - D. Ross, NOAA/SAIL, Miami, Florida USA  
                  (presented by G. Maul)

Antenna pattern correction procedures for the scanning multichannel  
                  microwave radiometer (SMMR) - E. Njoku, Jet Propulsion  
                  Laboratory, Pasadena, Calif. USA

Radiometric signatures of boats and wakes at 35 GHz - L. Klein,  
Honeywell Inc., Minneapolis, Minnesota USA

Morning  
(second  
part)  
&  
Afternoon

Water Colour Chairman A. Morel

Ocean colour measurements (Review paper) - A. Morel, University  
of Paris, Villefranche-Sur-Mer, France.

Water colour and its relation to primary production - N. Hojerslev,  
University of Copenhagen, Denmark

Some results from campaigns with the NASA ocean colour scanner  
in Europe - B. Sturm, Joint Research Center, Ispra, Italy.

Remote measurement of substances in water using a two flow model -  
R. Doerffer, Universitat Hamburg, Germany.

Observations of in-situ fluorescence of chlorophyll a in Saanich Inlet -  
J. Gower, Institute of Ocean Sciences, Patricia Bay,  
Sidney, B.C. Canada

Algorithms for remote sensing of water colour from space -  
M. Viollier, N. Baussart, Universite de Lille, France.

Gulf of Mexico Ocean Colour Surface Truth Measurements -  
R. Austin, Scripps Institution of Oceanography, La Jolla,  
Calif. USA

Atmospheric Corrections of Remotely Sensed Radiance Data -  
W. Wilson, Scripps Institution of Oceanography, La Jolla,  
Calif. USA

Upwelled spectral radiance distribution and its relation to total  
seston in marine waters - D. Clark, A. Strong and E. Baker,  
NOAA/PMEL, Seattle, Washington, USA

Atmospheric effects in the remote sensing of phytoplankton  
pigments - H. Gordon, NOAA/PMEL, Seattle, Washington USA  
and D. Clark, NOAA/NESS, Suitland, Maryland USA

Friday, June 16, 1978

Morning

Infrared measurements Chairman P. Kuhn

Airborne three channel infrared inference of air-sea interface  
temperatures - P. Kuhn, L.P. Stearns, E.S. Salazar,  
NOAA/ERL, Boulder, Colorado USA

Atmospheric effect on sea surface temperature measurements and  
and its multispectral correction in the infrared -  
P.Y. Deschamps and T. Phulpin, Université de Lille,  
France.



The Aqueous Thermal Boundary Layer - Kristina B. Katsaros,  
University of Washington, Seattle, Washington USA

Satellite Infrared monitoring of time varying ocean surface  
phenomena in the Mediterranean Sea - D. Nichol, JPL,  
Pasadena, Calif. USA, J. Gallagher, US Navy, New  
London, USA and R. Lasbleiz, Centre de Meteorologie  
Spatiale, Lannion, France.

Radiometric determination of sea surface temperature: parametrization  
of the atmospheric correction - D. Imbault, Laboratoire  
de Meteorologie Dynamique, Palaiseau, France

Long Period variability in the equatorial Atlantic - O. Brown,  
University of Miami, Florida, USA

Afternoon (first part) Sea Ice Observations (Review paper) - W. Campbell, University  
of Puget Sound, Tacoma, Washington USA

Afternoon (second part) Visible and infrared measurements Chairman B. Bean

Enhanced infrared and visible satellite imagery for the analysis  
of ocean fronts - P.E. Laviollette, NORDA, Bay St. Louis,  
USA and S. Peteherych, AES, Toronto, Ontario Canada

Time Series Analysis of randomly spaced infrared and visible  
satellite observations of oceanic fronts - G. Maul,  
NOAA/AOML, Miami, Florida USA

Some features of ocean fronts - O. Johanessen, University of  
Bergen, Norway.

Working group discussions were then held, June 19 to 21, and  
the reports presented here were prepared.

The Colloquium was followed by a one-day symposium, June 22,  
on "the use of optical lasers for remotely studying the ocean". Topics  
covered included measurements of Raman, Brillouin and Rayleigh scattering  
for measuring profiles of temperature, salinity or sound velocity. Results  
on chlorophyll fluorescence and lidar bathymetry were also presented.  
A report on this meeting is being prepared separately by H. Gordon, NOAA/PMEL,  
Seattle.





## REPORT OF THE PASSIVE MICROWAVE WORKING GROUP

prepared by

C.T. Swift, NASA, Langley

## 1. INTRODUCTION

The papers presented covered the range of ocean observations that are possible with passive microwave sensors. For ocean surface temperature, salinity and windspeed, discussion centred on separation of these three variables using measurements at several frequencies.

Sea ice mapping is a relatively well developed application, and the signatures of oil spills, ships and their wakes, and pollution were also discussed. The following sections summarize the presentations, the panel discussions and the resulting recommendations.

## 2. PAPERS

The first microwave paper was presented by T.T. Wilheit of NASA/Goddard. Wilheit discussed methods of accurately retrieving oceanographic geophysical parameters while correcting for atmospheric radiation. In the 1-40 GHz, microwave band, corrections are generally required for radiation from water, both in the vapour and liquid phases. The known spectral response of the surface and atmospheric radiation allows one to separate geophysical parameters via quasi-statistical retrieval methods.

In the microwave session, a review paper was presented by C.T. Swift of NASA/Langley. The paper reviewed the physics of emission, the instrumental techniques, and discussion of demonstrated geophysical measurements, such as temperature, salinity, wind speed and oil spills. These measurements were then related to the accuracy and spatial resolution required by the user, and recommendations were presented for future research.

The next paper by E. Njoku discussed antenna pattern correction procedures for the SEASAT 1/NIMBUS G Scanning Multichannel Microwave Radiometer (SMMR). Because of the relatively high side-lobe level, polarization rotation resulting from the antenna scan, and the cross-polarization level, some rather sophisticated matrix methods are required in order to determine the true brightness temperature of the earth. This is a necessary intermediate step in order to accurately retrieve geophysical parameters.

The next presentation was given by L.A. Klein of Honeywell Inc. on the Radiometric Signatures of boats and wakes at 35 GHz. The measurements utilized a total power radiometer mounted on a helicopter. The results generally showed that the brightness temperature of the bow and stern wakes was warmer than the undisturbed surrounding water. The brightness of the ships was tens of degrees cooler than water because of the higher reflectivity of the ship. This paper drew attention from the audience because of the relative lack of sophistication of the instrument.

An informal paper was presented by A.M. Shutko of the USSR. This paper reviewed aircraft and satellite experiments conducted over the years in the Soviet Union. The paper focussed on aircraft measurements of ocean salinity, and satellite measurements of ocean wind speed and associated retrieval techniques. Results were presented from the microwave radiometers flown on the satellites COSMOS 243 and 384 in September 1968 and December 1970 and showing brightness temperature variations correlated with physical temperature and wind speed over the Pacific, Atlantic and Indian oceans. Airborne data were presented on these same variations with additional effects of swell, high salinity in lakes, rough seas and ice. Both the experimental work and the associated theoretical calculations made an interesting comparison with the U.S. data presented earlier.

W. Campbell (USGS, Tacoma, Washington) presented the latest version of the US/Canadian time lapse movie produced from Nimbus 5 ESMR data showing ice cover variations in the Canadian Arctic during September 1973 to December 1974. New insights into the freezing and melting cycle have been gained by studying the data in this way and it will be possible to study the annual variability of this process if data continues to be processed to extend the period covered.

### 3. PANEL DISCUSSIONS

The panel recognized that passive microwave offers near all-weather measurements of ocean surface ice cover, temperature, wind speed, salinity and oil spills. Quantative interpretation of the radiometric measurements of ocean dump sites have also been made. Although the signature is weak, it is detectable, and further research was recommended. Deep ocean salinity can be measured to an accuracy of 0.3‰ to 0.5‰. This may be of marginal accuracy for detailed oceanographic measurements of density and evaporation/precipitation; however, the measurements should be of value in specialized regions, such as the tropics. The value of synoptic measurements with reduced accuracy should also be explored.

The panel recommended a joint USA/USSR aircraft radiometric measurement program in support of SEASAT 1. A letter was sent by IUCRM President Bean to the NASA Associate Administrator for Space and Terrestrial Applications recommending such a program. This proposal was, however, rejected because it was unclear from the NASA view that such a program would provide a significant addition to the current NASA underflight program.

The ice cover data could clearly benefit from higher spatial resolution, and some suggestions were made for improvements in the movie. Campbell stated that a sound track was being added to give a more detailed explanation.

The panel summarized the demonstrated capabilities of passive microwave sensing as follows:

#### a. Measurement of Ocean Temperature

It has been demonstrated that sea surface temperature can be measured to within an absolute accuracy of 1°C when the ocean surface is smooth. A judicious selection of viewing angles will extend this capability to provide



accurate measurements of temperature when the surface is roughened by ocean waves. More research and multi-spectral measurements are required in order to demonstrate that temperature can accurately be retrieved when foam covers the surface.

#### b. Measurement of Surface Salinity

If instruments are developed utilizing the NASA/AAFE S-Band radiometer design, it is feasible to measure salinity to within an absolute accuracy of 0.3-0.5‰ over smooth water. With this accuracy it will be possible to infer coarse measurements of mass density and evaporation/precipitation. Although the remotely sensed measurements are an order of magnitude short of what the oceanographer generally requires, aircraft platforms may provide some useful data, particularly in the study of evaporation/precipitation in the tropics and in coastal zones, where a contrast from 0-35 ‰ is common.

#### c. Measurement of Ocean Surface Wind-Speed

Wind speed is inferred by measuring changes in thermal emission resulting from surface roughness and percent foam coverage. If uncorrected such changes cause errors in temperature and salinity measurements referred to above. Although the thermal emission monotonically increases with windspeed under conditions of fully developed seas, more research and experimental data are required to determine the physics of emission and to establish quantitative relationships between wind-speed and ocean surface conditions.

#### d. Oil Spill Detection/Exploration and Pollution

Radar can detect oil spills; however, passive radiometers can also sense oil spill thickness. The measurement of thickness could be important for determining clean-up procedures and modelling. There was consensus that all types of effective sensors should be deployed.

Microwaves may detect seepage of unknown deposits of oil, and may therefore be a valuable exploration tool.

Qualitative data has strongly suggested that microwave radiometers can detect the drift of pollutants away from ocean dump sites - although the contrast is weak. Additional research effort is recommended in order to quantify the signature of water pollutants.

#### e. Measurement of Fresh Water Ice Thickness

Microwave radiometers can theoretically measure the thickness of fresh water ice. A demonstrated capability could be helpful in extending the shipping season.

#### f. Sea Ice Mapping

This is currently the best developed application of passive microwave radiometry to the ocean. The data from the Electronically Scanned Microwave Radiometers on Nimbus 5 and 6 have produced brightness maps mosaiced to cover

nearly complete coverage of the polar regions for a period of over a year, and the data has been graphically presented in the form of time lapse movies. The imagery is not affected by clouds or darkness, and the coverage is repeated at 3 day intervals. Use of the data is currently restricted by its low spatial resolution (about 25 km), but interpretation techniques are being developed to allow some estimates of fractional ice cover and age distribution within each element of the image.

#### 4. RECOMMENDATIONS

a. There is a need for co-operative International efforts to collect microwave and surface truth data to allow improved microwave measurements of temperature, salinity and wind speed. A letter was sent by Dr. Bean, president of IUCRM, to NASA (June 27, 1978) proposing a co-operative effort between the USA and the USSR involving data collection by ship, aircraft and satellites (see conclusions).

b. There is a need for a light weight, inexpensive radiometer in which long term stability may be somewhat compromised in order to detect sharp gradients of temperature and salinity.

At the present state of the art it seems possible to produce a two frequency radiometer package, convenient enough to be flown on "aircraft of opportunity" flights over coastal areas, which could produce useful profiles of salinity and temperature.

c. A Radio Frequency Interference survey should be done from space - perhaps using the Space Shuttle - in order to select "clean" operating bands, for various operating areas.

d. Further controlled laboratory experiments are needed to provide data for sensor and algorithm design.

e. In the field there is a need for both spacecraft and aircraft measurements. Spacecraft will provide global measurements with tens of kilometers spatial resolution. Aircraft will measure localized phenomena with higher spatial resolution.

f. Future satellite systems should be less constrained by the spacecraft, and optimum instruments designs should be utilized in order to reduce retrieval complexity introduced by instrument limitations.

g. Future spacecraft systems should have both an imaging and a non-imaging mode. The imaging mode would provide a map of spatial variations on the sea surface and the non-imaging mode would provide more precise microwave measurements.

h. The trade offs involved in all-purpose vs. dedicated radiometer systems should be critically examined; i.e. different spacecraft radiometer systems may be needed to measure polar ice and oceanographic parameters, and an "all purpose" instrument might compromise both missions. In particular relatively low frequency measurements are needed, for salinity and temperature mapping.



## REPORT OF THE THERMAL RADIOMETRY AND IMAGERY WORKING GROUP

prepared by

E.P. McClain, NOAA/NESS, Washington, D.C.

## 1. INTRODUCTION

The papers presented in these two sessions fell mostly into two areas, viz. remote measurement techniques for sea surface temperature, and applications of infrared measurements to oceanographic problems. The following two sections attempt to summarize briefly the key findings and resulting discussion and to present recommendations for subsequent action or research in this area.

## 2. SUMMARY OF PAPERS AND DISCUSSION

a. Measurement Techniques

Deschamps and Phulpin presented the results of an investigation into the effect of the atmosphere on infrared determination of sea surface temperature, and they explored theoretically correction procedures based on the three water vapour window channels to be available on the TIROS-N/AVHRR. Somewhat surprisingly to many, the results obtained when using only two channels (viz. 3.7 and 12  $\mu\text{m}$ ), yield a surface temperature accuracy of about 0.5°K for a  $\text{NEAT} = 0.2^\circ\text{K}$ . A more complex algorithm using all three channels required a  $\text{NEAT} < 0.1^\circ\text{K}$  for comparable accuracy.

Imbault demonstrated how the atmospheric correction could be parameterized in the case of dual window measurements by use of a large number of synthetic soundings. The precision of this method is comparable to that of others (e.g. Prabhakara or McMillin), and is only a little less precise than the second-order iterative method proposed by McMillin, taking substantially less computation time.

Katsaros, in a discussion of the aqueous thermal boundary layer, pointed out that for many infrared applications consideration should be given to how much the radiation temperature (uppermost 50  $\mu\text{m}$  of water) differs from that of lower strata (say at a depth of 20 cm or more). The vertical temperature difference (i.e.  $T_{\text{sfc}} - T_{0.2\text{ m}}$ ) in this layer is inversely proportional to the mean wind and is also affected by the absorption of solar radiation. Observed and inferred values of this gradient are typically of the order of -0.2 to -0.5 K for wind speeds of 2-8  $\text{m sec}^{-1}$ , with the greatest variability at very low wind speeds. Above about 8  $\text{m sec}^{-1}$ , when waves are breaking and spray begins to occur, the thermal boundary layer may vanish altogether or become intermittent.

Discussion: Brown commented favourably on the fact that the authors used advanced line-transmission models in their calculations of atmospheric corrections to infrared measurements. McClain and others commented on the desirability of immediate testing of the proposed techniques with multiple window channel measurements when they become available from the AVHRR on TIROS-N in the latter half of 1978. McClain noted that strong thermal boundary layer effects have been observed in the GOSSTCOMP values during

summer in the low-wind regions of the sub-tropical anticyclones (satellite temperatures appear too high). Tabata added that even shipboard bucket temperatures are often significantly higher than intake temperatures under such conditions.

## b. Applications

Maul reported on using existing GOES infrared image sequence data to construct a time-series of Gulf Stream meanders from the Yucatan Strait to the Grand Banks.\* He showed that least-squares analysis can estimate the spectrum of meanders from a data set which is randomly spaced due to cloudiness. The satellite-based spectra showed peaks at periods which were coincident with historical shipboard studies and uncovered new meander periods. Maul then showed the utility of combining GOES satellite data and conventional oceanographic data to verify a continuity model of Gulf of Mexico circulation.

Brown gave an example of how currently available large-scale satellite infrared measurements were applied to oceanographic studies. Daily sea surface temperatures ( $0.5^\circ$  lat./long. grid) were utilized to examine zonal variability in the Atlantic equatorial region. Weekly to monthly periodicities and meridional motions are resolved. The present analysis technique relies on the satellite sensor faithfully reproducing the second-order moments of the thermal field rather than the mean. Such an analysis resolves the large-scale equatorially-trapped, zonally propagating, baroclinic phenomena.

Johannessen, as a result of studying small-scale ocean fronts in the Mediterranean and Barents Seas by means of aircraft-borne radiation thermometer and conventional observations, concluded that such fronts are often controlled by salinity differences as much as by thermal differences. The fine-scale of such fronts, and also of many other ocean circulation features (e.g., small upwelling zones), requires the use of aircraft instead of satellites.

Nichol presented a paper co-authored with Gallagher and Lasbleiz describing a quasi-permanent ocean gyre and front that was found to exist just east of Gibraltar in the Mediterranean Sea throughout a one-year observation period by means of NOAA-5 and METEOSAT imagery data. In summer the inflowing Atlantic water is colder than the Mediterranean water, but the inverse is true in winter. A system of computer programs to enhance, display and analyze these and similar infrared images is being developed at the Naval Undersea Systems Center. The ultimate aim is to automate completely all these processes so as to obtain a low-data rate product for routine transmission to ships at sea.

LaViollette and Peteherych demonstrated that features in simultaneous visible and infrared imagery of the ocean surface obtained from the NOAA-5 satellite often show a high degree of correlation. An area where this is especially pronounced is along the western boundary of the Gulf Stream off the coasts of Nova Scotia and Newfoundland. The area involved is very large and

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\*

These results are found in an article accepted for publication in the Journal of Geophysical Research



centered on the line of geometric specular reflection of sunlight. It has been suggested that the regions of enhanced brightness (glitter) in the visible correspond to areas of reduced capillary wave roughness. This diminished surface roughness may be related to locally weaker winds or it may result from processes internal to the ocean. A combined ship, aircraft and satellite experiment (LaViollette and Gower) is being performed in this area to determine the causes of the observed correlation between the visible and infrared imagery, and to map the roughness variations with the SEASAT synthetic aperture radar.

Additional informal presentations: During the course of the workshop discussions several extra, informal presentations were made by Maul, Brown, Rouse and Tabata. Maul presented some results of radiative transfer calculations for GOES\*. He first showed that standard model atmospheres overestimated the moisture effect by 2°K-5°K when compared with cloud-free atmospheres. He then showed theoretically that the horizontal temperature gradient observed at the satellite was related to the horizontal temperature gradient at the surface by only the atmospheric transmissivity:  $\nabla_h T_o / \nabla_h T_s = \tau$ . Finally, Maul showed that transmissivity at 11.6  $\mu\text{m}$  was a function only of the precipitable water vapour along the slant path from the surface to the GOES radiometer.

High resolution geometrically corrected, scaled and re-oriented VHRR IR images for the Spring of 1977 were presented by Brown. These retrievals are then smoothed with a 3x3 pixel center weighted gaussian spatial filter to reduce the variance in the temperature domain, and compared with a research ship surface thermal section acquired contemporaneously. Temperature differences between the two methods (after bias adjustment of the satellite temperatures) showed  $\sigma = 1.1^\circ\text{C}$ , with a correlation coefficient 0.85. This technique demonstrates that a combination of the ship and satellite results permits generation of accurate two-dimensional surface temperature maps.

L.J. Rouse (Coastal Studies Institute, Louisiana State University) presented the results of work that has been carried out in the Gulf of Mexico. Measurements were presented which showed that spatial and temporal variations in atmospheric water vapour content will produce changes in the thermal contrast of sea surface temperatures as imaged by infrared radiometers. In order to preserve most accurately the thermal differences involved with mesoscale coastal fronts, satellite infrared data acquired through an atmosphere containing less than 1 cm of total precipitable water were found to be necessary. These conditions, as associated with the outbreaks of polar continental air, were also the causes of the modification of the coastal water masses.

Tabata (Institute of Ocean Sciences, Patricia Bay, Canada) reported on a comparison between the sea surface temperature obtained at several time-series stations (viz. Ocean Station P and NOAA buoy stations) and by the merchant and naval ships in their vicinities indicates that the ships' temperatures are  $0.2 \pm 1.5^\circ\text{C}$  greater than those of the time-series stations. This large standard deviation implies that the quality of the ships' temperatures are not as good as it ought to be and efforts should be directed to improve it.

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\*These results are found in an article accepted for publication in the Journal of Geophysical Research



A comparison between the surface temperatures observed by a research ship and those based on satellites shows, from limited data examined, that the satellite-derived temperatures, when field-calibrated, agree to within  $\pm 0.5^{\circ}\text{C}$ .

Discussion: It was commented by Huh that satellite observations can be used for deploying research vessels more effectively and economically. Johannesson added that this is also true for the deployment of remote-sensing aircraft. McClain stated that each type of observation platform has its unique advantages, and thus they are complementary in nature. Brown noted that the scale differences among these different data types is often glossed over and needs more attention if comparison or combination of data sets are to be meaningful.

Brown also noted that a need exists to give the oceanographic community more complete information on the recent developments in satellite image processing hardware and software that enable delivery of satellite infrared data in located, rectified, enhanced formats. This relates directly to one of the key requirements stated by Apel in his opening talk. Apel also included the need for calibrated and atmosphere-corrected infrared measurements from satellites.

McClain remarked that GOSSTCOMP temperature retrievals, despite their shortcomings, appear to be useful for climatological data sets (e.g., monthly means and derived annual or month-to-month changes or anomalies) generated from monthly accumulations of individual retrievals. It was noted that for some applications use of GOSSTCOMP data that has not been through the "objective analysis" process of interpolation and editing may yield more reliable results. In the future, the 4-km resolution global data sets (mapped, digital IR) from the AVHRR on TIROS-N are expected to be of high enough quality for many oceanographic applications not feasible with the 8-km mapped SR data because of the lower noise content.

McClain commented that the high degree of correspondence that has been observed between glitter features in the visible-band images and thermal-field features in the associated infrared images is often clearly associated with either fetch-related roughness variations (e.g. decreasing glitter intensity down-wind and seaward from coastlines) or with thermal fronts, in which case the brighter glint is almost always associated with the colder water surface. The latter suggests that the explanation involves differential atmospheric stability effects (e.g. air moving over a colder water surface is stabilized, transfer of momentum from the air to the water is inhibited, the ocean surface will tend to be smoother, and the glitter return to the satellite correspondingly greater). Peteherych noted, however, that the colder surface is not always the brighter one, so alternative explanations may be needed.

### 3. RESEARCH REQUIREMENTS AND RECOMMENDATIONS

The infrared working group met to discuss current research problems and to identify future ones. Results of the discussion and resulting recommendations are summarized below.

a. Little is known about the mesoscale modification of the atmosphere from land, to coastal regions, to the open sea. This atmospheric variability

significantly affects single channel infrared sensing, but should be less important in multi-channel measurement schemes. Recent results have shown that sensor noise is a major contribution to temperature measurements utilizing multi-channel radiometers; significant improvement requires a lowering of NE $\Delta$ T to less than 0.1 K. It is recommended that site specific experiments be conducted to quantify the mesoscale moisture variability, from both conventional and radiometric soundings, and that theoretical radiative transfer model calculations be used to study the infrared spectral response. Since there are still some uncertainties in the transfer models, it is recommended that several different solutions be obtained and inter-compared.

b. It was noted that visible (0.6-0.7  $\mu$ m) and infrared (10.5-12.5  $\mu$ m) dual channel VHRR data often show similar patterns. Sea roughness variations linked to surface temperature, or reflected solar radiation at 10  $\mu$  would cause this, but the explanation has not been quantified. Experiments with ships and aircraft providing the necessary physical data are recommended, using calibrated visible and infrared spacecraft measurements. With respect to the AVHRR, the 3  $\mu$  channel needed for atmospheric correction of sea surface temperatures will be strongly affected by sun glitter during the day. Successful quantification of the glitter effect would allow day/night use of the instrument, and contribute to expanded use of the CZCS as well.

c. Comparison of satellite and ship measurements of sea surface temperatures are hampered by the low accuracy of temperature measurements reported by ships. Comparisons of ship reports with more accurate measurements from specialized platforms show this scatter to be about  $\pm 1.5^{\circ}\text{K}$  (standard deviation). It is recommended that the WMO upgrade those determinations by calibration of injection thermometers when port meteorological officers calibrate shipboard weather instruments.

d. Comparison of satellite and ship measurements of sea surface temperatures are complicated by the great difference in scale between the area averaged by a satellite radiometer and the point or continuous one-dimensional measurements of surface craft. It is recommended that a theoretical study of the sampling problem be initiated.

e. In addition to the need for calibrated bulk temperatures from ships, further research is required to quantify the "skin" effects which cause a difference between radiometric and bulk temperatures ( $\Delta T$ ). RMS variability in  $\Delta T$  is known to be more than  $\pm 1^{\circ}\text{C}$ , which is at least as large as the uncertainty tolerances of the whole infrared sensing system.  $\Delta T$  probably has geographic dependence, is dependent on the infrared wavelength, at which it is measured, and on the direction of the heat flux vector. Further research into the microscale air-sea interaction is necessary both theoretically and observationally to meet oceanographic requirements for sea surface temperature.

f. Advanced image processing hardware and software are virtually inaccessible to the average geophysical user, but several presentations at the Colloquium demonstrated the capabilities of such systems. Considerable development of software for standard hardware arrangements has already taken place at a number of institutions often with an emphasis on meteorological applications. It was brought to the IUCRM's attention that the American Meteorological Society is investigating the current situation and plans to make a recommendation on



standardization to allow simple exchange of techniques between different groups. Because of the large overlap of problems and techniques between meteorology and oceanography and because oceanographers are now starting to invest in processing systems it is recommended that:

- (1) There be strong oceanographic input to the AMS working group
- (2) The oceanographic community be made aware of this effort towards standardization.

g. It was also noted that major developments in software are still needed for enhancements, pattern recognition, geometrical correction and quantitative temperature determination. Such developments will be more widely and efficiently used if systems are standardized as recommended above and if common data base formats allow early access to data sets.

h. Studies need to be done to determine the optimum satellite data products which will be disseminated in standard form. It was noted that much sea surface temperature information was lost because no standard enhancement of NOAA VHRR thermal imagery was being archived as photographic prints or transparencies.

i. Visible and thermal imagery from space are important to sea ice studies and will remain so for the foreseeable future. Passive microwave sensors with comparable resolution are not at present feasible. Imaging radar could give cloud-free imagery of comparable resolution and coverage in the near future, but even then the visible/thermal data will provide useful extra information.

j. Interpretation of night time thermal imagery is complicated by possible presence of low cloud. Current visible imagery shows cloud in daylight and the higher sensitivity of the CZCS and AVHRR sensors should be capable of imaging cloud in moonlight. It is recommended that the visible imagery from these instruments be evaluated for night operation with a goal of routinely acquiring data when sufficient moonlight is present.

In conclusion, the committee recommends a balanced theoretical and observational research program aimed at quantifying infrared measurements for the purpose of direct application to a wide range of geophysical problems. This requires that multispectral aircraft as well as spacecraft data acquisition be used, and that the output products be in a common format which is acceptable to the user community. Research programs which exploit currently available (coupled) remote sensing and conventional data are strongly encouraged. It is anticipated that through these recommendations the next generation of measuring devices can be specified, and that the most detailed knowledge of surface thermal variability to date will be obtained.



## REPORT OF THE WATER COLOUR WORKING GROUP

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This report of the activities of the IUCRM working group on water "colour" is divided into two parts: a summary of the formal and informal presentations made at the meeting, and a summary of the conclusions and recommendations reached during the working group meetings. Members of the working group and their affiliations are given in the appendix. The group's discussions were divided into four categories: inwater studies and algorithms, atmospheric effects and correction algorithms, design of the next generation spacecraft sensors, and future projects. Naturally, most of the discussion concerned the Coastal Zone Colour Scanner on Nimbus-G but discussion was not restricted to this sensor. There were few members of the working group specializing in sediment studies; this is reflected in the fact that the major portion of the report deals with the remote determination of phytoplankton pigments.

## I. SUMMARY OF FORMAL AND INFORMAL PRESENTATIONS

A. Introduction

The intrinsic "colour" of the ocean is physically described by the spectral values of the reflectance ratio  $R(\lambda)$  (ratio of upwelling to downwelling irradiance just beneath the surface). Extensive experiments performed at sea have led to a collection of  $R(\lambda)$  curves for various waters with respect to turbidity and phytoplankton pigment contents. Theory exists which accounts for  $R(\lambda)$  behaviour and variations due to the combined influences of absorption and scattering by water itself, and by its contents (dissolved as yellow substance, and particulate as phytoplankton and other sediment or detritic suspensoids). By using realistic values for absorption and scattering by water, the  $R(\lambda)$  curves for "blue" and pure seas are fully accounted for. In the case of various "green" waters, the agreement between predicted and actual values for  $R(\lambda)$  is less satisfactory, to the extent that specific spectral values for absorption and scattering, attributed to the diverse materials present in these waters, may not be representative.

The inverse problem, i.e., to infer the content of the water from  $R(\lambda)$  values, can only be solved at the price of assumption (concerning the backscattering by particulates and its spectral dependence) and at the price of a better knowledge of the specific absorption by the various interacting components.

Above the water, the specularly reflected light at the surface is added to and masks the signal emerging from beneath the surface. The estimate of the fraction of the signal due to reflection can be done in the near IR (740 nm) and then extended to the whole spectrum, allowing recovery of the useful marine signal by subtraction. Examples have been shown of this procedure applied to spectral data obtained above places where inwater spectral data were also recorded. Agreement between derived and true values

was satisfactory. Moreover, spectral values received at different altitudes permit an experimental evaluation of the atmospheric effect (transmittance and backscattering), which demonstrates the importance of this very highly perturbing term because of its magnitude and its spectral dependence. When considering the weakness of the marine signal compared to the atmospheric signal and the necessity for the marine signal to be restored with high accuracy in order to allow a meaningful use of algorithms, the problem of a correct estimation of the aerosol content and of its spectral influence appears crucial.

Ignoring the last problem, and dealing only with the marine information and its significance, the motivations to study it rest on the experience that  $R(\lambda)$  values are strongly affected not only by the presence of phytoplankton, but also by particulates and/or dissolved substances. The importance of these oceanographic parameters has maintained the continuing interest in water colour studies and has recently led to the development of the Nimbus-G CZCS (Coastal Zone Colour Scanner).

Most of the papers presented emphasized the difficulties in separating the effects on colour of the various substances mentioned above. For instance, in coastal waters with high amounts of suspended sediment and detritic material (e.g., African upwelling area) and simultaneously with a high level of dissolved "yellow substance" (e.g. North Sea, Baltic Sea), recovery of the algal pigments seems very difficult. The case of the open sea appears simpler in this respect.

Also, it has been pointed out that colour may provide an approximate estimate of the depth of the euphotic zone, which is useful information complementary to the pigment evaluation.

#### B. The Nimbus-G CZCS Experiment

The general characteristics of the Nimbus-G CZCS were described along with operational plans. Among the several unique features of the CZCS expected to be of interest to investigators involved in coastal and ocean studies are the narrowness of the spectral bands, the high sensor signal to noise ratio, the variable sensor gain optimized for use over water, the ability to 8-bit digitize only the top 30% of the signal in the visible channels if desired, the large ocean area which can be imaged in one two-minute data segment ( $1.3 \times 10^6 \text{ km}^2$ ), and the capability of tilting the scan mirror to reduce the effects of sun glitter. The data from the sensor will be combined with algorithms being developed by the CZCS Experiment Team (NET) to estimate the concentrations of the constituents of the water, such as phytoplankton pigments and total seston. The NET is formulating three post-launch validation experiments concentrating on the Gulf of Mexico, the Gulf of California, and the New England Fisheries area. Several European and South African validation experiments are also planned. Moreover, laboratory and field studies aimed at an improvement of algorithms are in progress in the U.S. and in Europe.

In addition to the CZCS, an advanced "ocean colour sensor" study planned for the Shuttle was presented. Further improved performances (concerning a better spatial resolution than that offered by the CZCS and perhaps more useful for coastal zone studies) could be obtained through the



use of linear array detectors. Multiple narrow spectral channels and better radiometric sensitivities are achievable at the present time.

### C. Airborne Experiments

Four ocean colour experiments using airborne radiometers such as the OCS (Ocean Colour Scanner) were reported. They are:

An equatorial upwelling area, with a frontal structure, off Gabon was surveyed two times (1975 and 1976) during one month with a 4-channel airborne radiometer. The results demonstrate the potential use of such a remote technique in the spatial and temporal study of the colour changes.

An OCS measurement campaign in Europe (North Sea) took place in 1977, combined with sea-truth and atmospheric parameter measurements. Spectroradiometric measurements (350-750 nm) were obtained in the same area from low altitude (50-100 m). The results are not yet satisfying, mainly because of the uncertainties in the calibration of the OCS scanner. Ground-based measurements of atmospheric properties were used and are necessary since correction for the atmospheric effect, based on satellite data only, will be difficult, or even impossible, in these relatively turbid waters.

An analysis of the images produced by an OCS flown on a U-2 over the New York Bight was presented, demonstrating the feasibility of making atmospheric corrections for retrieval of chlorophyll a concentrations from such remotely sensed data.

A cruise (October 1977) in the Gulf of Mexico for calibration and intercomparison between members of the Nimbus Experimental Team was described and selected results presented. Ratios of upwelling radiances at 440, 520, and 550 nm were correlated to total seston and total algal pigments.

### D. Algorithms for Interpretation of "Water Colour"

It seems that three different approaches have been undertaken to use the spectral radiance values - supposedly corrected for all above-surface contamination - and three methods have been developed:

i) an empirical (and statistical) method, ii) a semi-empirical method, and iii) an analytical method.

i) Using a small but diverse set of measurements, it appears possible to estimate total phytoplankton pigments with  $\pm 1/4$  log accuracy and total seston with  $\pm 1/6$  log accuracy from ratios formed from the upwelling subsurface radiance at 440, 520, and 550 nm. The data also show that total phytoplankton pigments covary with the total seston in a predictable manner over 3 orders of magnitude, with the exception of certain specific areas. These areas (mouths of estuaries, coastal zones influenced by runoff or by resuspended sediments due to wind-induced agitation, glacial flour runoff, etc.) may be classified as ambiguous particularly by their abnormally high reflectance at long wavelengths.



ii) In the semi-empirical method, the optical effects of the material covarying with chlorophyll-a concentration and of the other material not covarying with pigments are taken into account. The ratios of radiances (440 and 520 nm) are expressed with respect to the diffuse attenuation coefficients (K) for these wavelengths. The K coefficients are split into partial coefficients established by statistical analysis for the two classes of material mentioned above. Conversely, the concentrations of material covarying with chlorophyll-a can be extracted from the radiance ratio. The resulting high correlation (obtained during the New York Bight experiment) between measured chlorophyll concentrations and derived values based on the computed inherent surface radiances (atmospheric corrections being achieved) suggests that the procedure developed has a high probability of determining surface pigments, even from high altitude radiance measurements.

iii) The analytical method uses a simple relationship derived from radiative transfer computations where the reflectance ratio is expressed as a function of the backscattering-to-absorption ratio. These backscattering and absorption coefficients are decomposed into their components (water and diverse suspended and dissolved materials, each with its specific spectral values and its unknown concentration). If R values are obtained at several wavelengths, several equations can be written. By inverting this system, algorithms are made explicit. They allow, at least theoretically, the computation of the desired concentrations. Presently the limitation of this method lies in the insufficient knowledge of the specific spectral absorption (and scattering) values used in the equations, or in other words, in the representiveness of the values actually used.

A completely different approach for the remote determination of pigments is also under study and was presented. This is based on the in vivo fluorescence emission by phytoplankton. The narrow band, centered at 685 nm, is for sufficiently high concentrations - and for low turbidity - detectable in the upwelling lightfield. Airborne measurements (improved by viewing at Brewster's angle to reduce reflected skylight by the use of a polarizer) were shown to demonstrate the feasibility of such a technique, which also may be combined with a blue-to-green ratio technique. The advantage of this fluorescence method is that it may provide an unambiguous answer concerning the presence of chlorophyll. Moreover, the atmospheric scattering and absorption are less at 685 nm and at the close wavelengths used to establish the base line. However, this method has its own limitations due to the well-known changes in fluorescence efficiency (physiological and ecological factors) and also due to physical problems, e.g., the effective thickness of the layer under investigation in such measurements (which depends on the optical properties of the water at the blue-green exciting and red emitting wavelengths).

#### E. Atmospheric Effect and Its Correction

The flux emerging from the sea is, in any case, small compared to the backscattered radiation by the air and the aerosols. Therefore accurate atmospheric correction is needed, especially if pigment concentration is the main parameter of interest. Mapping the turbidity areas and their temporal/spatial variations could be easier.

The principal problem, when dealing with such a correction, lies in the fact that concentration of the aerosol is highly variable (expressed by  $\tau_A$ , optical thickness at a given  $\lambda$  due to aerosols) and that the spectral influence of these particles is also variable (expressed by the variations of  $\tau_A$  with  $\lambda$ ). There was a general agreement on the method consisting of an evaluation of  $\tau_A$  in the near infrared, where the sea can be considered as a black body, followed by an extrapolation into the visible. This extrapolation requires the knowledge of the exponent for the power law (the so-called Angstrom exponent) characterizing the spectral dependence of the scattering by the aerosols. This exponent could be obtained through satellite measurements at several wavelengths in the near IR (unfortunately not offered by CZCS). Otherwise it has to be assumed or derived from groundbased measurements.

Based on the daily measurements of aerosol optical depth made in the Azores (open ocean conditions) in the frame of the Global Turbidity Network, the values of the Angstrom exponent have been estimated and its standard deviation computed. When extrapolating into the visible part of the spectrum, this deviation leads to a standard error on the sea reflectance at 450 nm of more than 0.01 (i.e., of the same order as the reflectance itself). Differences between reflectances at close wavelengths are less affected by this uncertainty in the atmospheric correction.

Based on the LOTRAN model, relationships between vertical path transmittance through atmosphere and horizontal visibility for the CZCS channels were presented. They are used to compute the vertical path radiances, which then are compared to the actual path radiances. The results presented indicate that the path radiance in one channel may possibly be used to predict the path radiance in another channel.

Combining the empirical algorithm (see above) with a particular atmosphere algorithm correction (using the CZCS 670 nm channel), it was shown that for low chlorophyll concentrations (near  $0.1 \text{ mg m}^{-3}$ ) a good recovery of these concentrations would be obtainable with only a rough estimate of the atmospheric parameters. Requirements for the accuracy of these parameters for a given pigment accuracy were established and it was shown that groundbased atmosphere measurements could be carried out with sufficient - in fact high - accuracy to yield meaningful results about pigment concentrations. Due to uncertainty in the atmospheric corrections, the radiance at 440 nm becomes useless for estimating pigments at concentrations greater than  $0.5 \text{ mg m}^{-3}$  (in that case, the water becomes green and the signal at 440 nm is lowered, except when the turbidity is simultaneously increased).

It was also pointed out by several participants that in the vicinity of continental areas the atmospheric parameters are more important and likely more variable, due to natural or human-induced conditions. Thus corrections are more difficult and their validity more questionable.

The problem of the removal of sun glitter from high altitude imagery is usually considered along with the atmospheric correction schemes. At present all methods of effecting such a removal are based upon using a roughness model of the sea surface, which requires a knowledge of the surface wind speed. In some cases it is possible to sidestep the need for surface



wind measurements by fitting the theoretical sun glint radiance variation with the sensor scan angle using the wind speed as a variable parameter.

## II. SUMMARY OF WORKING GROUP CONCLUSIONS AND RECOMMENDATIONS

### A. Inwater Studies and Algorithms

In water colour remote sensing studies, the investigator attempts to infer the concentration of ocean constituents (phytoplankton pigments, seston, etc.) from measurements of the upwelling spectral radiance detected at aircraft or spacecraft altitudes. In this section, a fundamental aspect of this problem is examined: the extent to which these concentrations can be obtained from upwelling spectral radiance measurements made just beneath the surface.

The three algorithms presented for retrieving C, the concentration of phytoplankton pigments (chlorophyll-a plus phaeophytin-a) from the subsurface spectral radiance, suggest that for a given region it is possible at the present time to obtain C with an error less than  $\pm 1/4 \log_{10} C$  over a wide range of pigment concentrations. Furthermore, for some ranges of concentration and conditions encountered in the open sea, the error may be considerably less. It should be emphasized, however, that no algorithm can be expected to work equally well for all regions, due to the diversity of the natural constituents of the water and the presence of environmental pollutants. Application of similar algorithms for total seston (S) yields somewhat better results and at present the error limit on this quantity appears to be about  $\pm 1/6 \log_{10} S$ . Again, it is important to note that the relationship between spectral radiance and S will vary from region to region, and individual investigators should establish this relationship for their area of interest.

To establish a relationship between C, S, and the upwelled spectral radiance beneath the water requires a considerable investment in instrumentation; however, the same instrumentation can also be used to provide surface truth for extending ship measurements over larger areas using airborne or spaceborne systems. The Nimbus-G CZCS Experiment Team has recommended the surface truth measurements for CZCS studies given in Table 1. The working group has examined these recommendations and suggests that a minimum set of surface truth measurements, within the reach of most investigators interested in the application of remotely sensed water colour, consists of the measurement of subsurface up- and downwelling irradiance profiles from the surface to the penetration depth ( $Z_{90} = 1/\text{minimum diffuse attenuation coefficient}$ ) at a minimum of two wavelengths (440 nm and 550 nm), profiles of chlorophyll a and phaeophytin a (measured from extracted pigments) from the surface to the penetration depth ( $Z_{90}$ ), and an index of suspended material such as total seston (determined by filtration and weighing) or the total scattering coefficient or both. In some waters, the yellow substances exert a very important influence on the upwelled radiance spectrum, and in these areas, it is important to account for this effect. This is accomplished by measuring the absorption coefficient of a filtered sample (immediately upon collection) at 350 nm. It is usually valuable to make Secchi depth and Munsell colour determinations along with the above measurements; however, the investigator should be warned that these are intended to supplement the recommended surface truth measurements, not to substitute for them.



When planning surface truth measurements in conjunction with CZCS overflights, the investigator should be aware of the fact that the surface resolution of the sensor (pixel) is approximately  $0.825 \times 0.825$  km at nadir and that the position error at the surface could be as much as 3-4 pixels. The pixel size can thus be larger than the scale of horizontal variability of C and S in coastal waters. Furthermore, this variability occurs in the vertical as well as the horizontal and also the relationship between C, S, and the subsurface radiance is in general nonlinear, so that a simple average of surface measurements of C and S will not suffice to address this problem. The working group recommends that for comparison with the CZCS in these highly variable waters the investigator assess the precise nature of the variability by, for instance, establishing several stations, carrying out continuous measurements en route and/or carrying out aircraft overflights in which the surface stations are resolved in the aircraft imagery.

It is clear that our ability to relate C and S quantitatively to water colour is impaired by the relatively small quantity of high quality oceanic data on which to devise and test algorithms. Furthermore, the algorithms developed thus far can be used with a high degree of accuracy (i.e., C error  $\pm 1/4 \log_{10} C$ ) only for those specific waters used to generate the algorithm (e.g., the Gulf of Mexico, etc.). Thus there is a considerable need for further experimental work in this area, and the working group recommends a continuing program directed toward establishing a data base to enlarge the area of applicability of the general algorithm (that to be used by NASA to carry out the basic CZCS processing) and aid in the development of more accurate algorithms. Since the spectral signatures of various species of phytoplankton are not identical and in fact can depend on age and growth rate, it is essential to study the optical properties of single species of particles under controlled laboratory conditions. The working group recommends that such studies be carried out and emphasizes that the scattering as well as the absorptive properties of the plankton and other naturally occurring materials must be measured. The measurements should be made in such a manner as to yield the scattering and absorptive properties in specific units, i.e.,  $m^{-1}/mg(Ch\ a + Ph\ a)m^{-3}$  for phytoplankton pigments and  $m^{-1}/g$  (Seston) $m^{-3}$  for suspensoids. In the case of yellow substances, the working group defines yellow substance through the absorption coefficient of filtered water at 350 nm in units of  $m^{-1}$  measured with respect to carefully and freshly distilled water as a standard.

The basic relationship between the irradiance reflection ratio R at a wavelength  $\lambda$  and the inherent optical properties of the medium (water plus constituents) is well understood theoretically. In remote sensing applications the derived quantity is not R but rather the upwelling spectral radiance at a nadir angle  $\theta$  (depending on the viewing angle) just beneath the sea surface  $L_w$ . R and  $L_w$  are related by factors depending on the angular distribution of the upwelled radiance. Unfortunately, these factors appear to depend slightly upon wavelength, so, even if an S or C algorithm uses  $L_w$  ratios, these ratios will in general be different from the corresponding R ratios. This relationship between  $L_w$  and R requires further study theoretically as well as experimentally in order to understand completely the basic dependence of  $L_w$  on the inherent optical properties of the medium. The working group recommends research directed toward this end.

## B. Atmospheric Correction Problem

The basic problem of atmospheric correction of remotely sensed water properties has been discussed in detail in the presentations and the literature. For this report it is convenient to divide remotely sensed waters into two classes: Class A waters, which can be considered black ( $L_w \sim 0$ ) at one wavelength (670 nm for CZCS), and Class B waters, in which  $L_w$  is not negligible at any wavelength. In general blue waters and green waters where C is dominant would fall in Class A, while green "milky" waters with high C and S and waters strongly influenced by terrigenous material would fall in Class B.

The general consensus of the working group was that the atmospheric corrections could be made with sufficient accuracy over Class A waters to derive useful values of C and S if the variation of the aerosol optical thickness with wavelength (the so-called Angstrom exponent  $n$ ) is supplied. At present, it appears that the Angstrom exponent cannot be estimated remotely with a sensor which operates with only a small number of wavelength bands in the visible portion of the spectrum (see Requirements for Next Generation Sensors below).  $n$  must be measured from the surface at the time of the sensor overpass by measuring the atmospheric transmittance at several wavelengths at or near those of the sensor bands. For regions of high C and/or S (Class B), the  $L_w \sim 0$  criterion cannot be met well in the visible and, in these cases, the influence of the atmosphere cannot be removed from the sensor's aperture radiance even if  $n$  is provided. In fact, in these regions, the atmospheric correction can be effected only through very detailed path radiance measurements made from the surface coincident with satellite or aircraft overflights. Even in the simpler Class A waters measurements of  $n$  will usually be carried out at only a single point in the image (or more often not at all) and the same value of  $n$  is assumed for the rest of the image. There is considerable data showing that  $n$  is temporally variable on a day-to-day basis, but there is essentially no information concerning the relationship between  $n$  values measured simultaneously at several locations over coastal and ocean waters separated by distances of the order of 10's to 100's of km. The working group strongly recommends that such measurements be carried out. Furthermore, to assess the atmospheric variability in the open ocean, the working group recommends that CZCS imagery be obtained over an area such as the Sargasso Sea or in the Mediterranean Sea where the optical properties of the water are known and stable. This imagery can be used to compute the variation of the aerosol optical thickness with wavelength, ( $n$ ) and its spatial as well as temporal stability. Simultaneous measurements of atmospheric transmittance from an island ground station located in Bermuda or Corsica and the Lipari Islands would provide auxiliary data which would be of considerable value in this assessment. As suggested above, the atmospheric surface truth measurements recommended for Class A waters consist of atmospheric transmittance at several wavelengths near those of the sensor while for Class B waters, the complete set of measurements described by Austin\* is necessary at each band.

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\* R.W. Austin, 1974. "The Remote Sensing of Spectral Radiance from below the Ocean Surface", in N.G. Jerlov and E. Steeman Nielsen (eds.), Optical Aspects of Oceanography, Academic Press, London, 317-344.



Except in rare cases, even Class B waters will be essentially black ( $L_w \sim 0$ ) at near infrared wavelengths; hence with the addition of several near infrared bands in future sensor systems it appears possible to use the Class A simplifications in Class B waters, and even to estimate  $n$  from measurements made only at the sensor and on a pixel by pixel basis.

### C. Requirements for Next Generation Sensors

Even though the CZCS has not yet been launched, the working group felt it important to address the question of the design of future systems based on what has been learned since the design parameters of the CZCS were chosen.

The most obvious difficulty with the present CZCS is that of correcting for the atmospheric (aerosol) effects and, at certain times and locations, for sun glitter. The working group concluded that since the unwanted signal could be as much as five to ten times greater than that from the subsurface water, as much attention must be given to the atmosphere and glitter correction problem as to the main problem of determining concentrations of phytoplankton pigments, seston, yellow substances, etc., in the water. As discussed above, it will be virtually impossible to correct the imagery from the present CZCS for the effects of sun glitter and the aerosols using only measurements made at the spacecraft even for Class A waters. The problem is that there is only one channel (670 nm) for which the ocean can be considered black (only for Class A waters) and essentially three quantities to be determined (sun glitter,  $\tau_A$ , and  $n$ ). (Note that it has been assumed that the variation of the aerosol optical thickness with wavelength can be described by a simple power law. When  $n$  varies with wavelength there are of course more unknowns.) Determining these quantities for Class B as well as Class A waters necessitates the use of several narrow channels in the near infrared spectral region away from water vapour absorption lines and Fraunhofer solar absorption lines. To estimate the effects of the aerosol through measurements made only on the spacecraft, it is crucial to utilize only spectral bands for which the subsurface upwelled radiance is essentially zero. Furthermore, at least three bands must be used: two will suffice to estimate  $n$ ; the third is required to ascertain any dependence of  $n$  on wavelength. To meet these requirements, the working group recommends bands near 745 nm, 880 nm, and 1060 nm. It should be noted that for some very highly turbid waters, the band at 745 nm cannot be used and  $\tau_A$  and  $n$  must be determined from the bands at 880 nm and 1060 nm for these special cases. The influence of sun glitter can be measured in spectral regions where it is dominant over other processes, and then transferred to the spectral regions of interest after the optical properties of the aerosol have been deduced. The working group concluded that this can be best accomplished by using a wide band channel extending from 3.55 to 3.93  $\mu\text{m}$  identical to that in the AVHRR on TIROS-N. However, after the meeting, Dr. Warren Hovis suggested that because of the presence of thermal radiation emitted from the sea surface in this band, the 2.1 to 2.3  $\mu\text{m}$  band would be more suitable; the working group recommends such a band for a possible CZCS follow-on. Furthermore, to lessen the importance of sun glitter in all channels the working group recommends that in future systems the maximum tilt angle of the scan mirror be increased from the  $\pm 20^\circ$  of the present CZCS to  $\pm 30^\circ$ . The four bands recommended above 745 nm, 880 nm, 1060 nm, and 2.1-2.3  $\mu\text{m}$ , will provide sufficient information for effecting atmospheric and sun glitter corrections on a pixel by pixel basis from measurements made at the satellite itself (no surface measurements



will be necessary). If high sensitivity in these infrared regions cannot be achieved with the same high spatial resolution as in the visible channels, the spatial resolution of the infrared bands should be degraded in favour of maintaining high spectral resolution and radiometric sensitivity.

The visible bands of the present CZCS (440, 520, 550 and 670 nm) appear to be well chosen for the estimation of phytoplankton pigment concentrations, and the working group recommends only small changes in the positions of these bands to improve the sensitivity of the C and S determinations: the 550 nm band should be moved to 560 nm and the 670 nm band moved to 685 nm to take advantage of the fluorescence peak. Additional visible channels would be valuable and if feasible should be added (1) at 400 nm to provide an estimate of C or yellow substances at very low concentrations and aid in correcting for aerosol effects at very high C and S concentrations, (2) at 610 nm to aid in the discrimination between C and S, and (3) at 640 nm to provide, along with 745 nm, a base line for determining the radiance of the fluorescence peak at 685 nm over the background and to aid in the discrimination between pigments and yellow substances, since the yellow substance absorption at 640 nm is virtually zero. All of the above-mentioned bands (except 2.1-2.3  $\mu\text{m}$ ) should have spectral widths of  $\pm 10$  nm. A summary of the sensor bands is given in Table 2. The present CZCS thermal band (10.5-12.5  $\mu\text{m}$ ) should of course be included on a follow-on as well.

The working group discussed the question of the spatial and temporal resolution required for various types of oceanographic investigations. It appears that with the present state of technology it is not possible to achieve with a single satellite the desirable properties of both high spatial and high temporal resolution. While the consensus of the working group was that the present CZCS has sufficient spatial and temporal resolution to carry out studies such as the pigment assessment program discussed below, there are many problems in coastal regions which cannot be addressed due to its low spatial resolution. Since the spatial and temporal resolution required for a follow-on system depends considerably on the type of investigations being carried out, the working group has chosen not to make recommendations on this question; rather, it wishes only to point out that the present CZCS parameters represent a reasonable compromise.

#### D. Future Projects

In the previous sections of this report a considerable number of recommendations for continued research have been made by the working group, e.g., further measurements of upwelled spectral radiance to establish a better data base for algorithm development, further measurements of spectral signatures of absorption and scattering of the various ocean constituents, further measurements aimed at providing information on the spatial variability of the aerosol Angstrom exponent, et cetera. These recommendations are directed toward extracting as much quantitative information as possible from remotely sensed spectral radiance data over water. In this section, the question of utilizing such information is considered. Many investigations of regional interest utilizing the capabilities of the CZCS have been proposed; instead of listing or discussing such programs the working group felt that it would be of greater value to discuss a project of global rather than regional importance.

After considering the fact that the CZCS is the only funded satellite sensor which is capable of providing information concerning living marine resources, the working group recommends that a program be established aimed at assessing the spatial and temporal variations of the phytoplankton pigment concentration on a global scale. This Global Assessment of Phytoplankton Pigments (GAPP) would consist of utilizing the CZCS to prepare monthly or bi-monthly world wide maps of the pigment concentration and hence provide an estimate of the total phytoplanktonic biomass of the world oceans as well as the spatial and temporal variation of the primary productivity. Due to the vastness of the oceans such an assessment would be virtually impossible to effect with either ships or aircraft. Assuming that the CZCS will operate, as planned, two hours per day, the total area of all the world oceans could be covered (utilizing the full swath of the sensor scan) once per month (ignoring cloud cover) with only about 16% of the total time allotted to the CZCS (8% if bi-monthly coverage is desired). Since imagery of the coastal areas of the U.S.A. and a considerable portion of European waters will be acquired on a routine basis, the above percentages actually represent an over-estimate of the operation time required for the program.

#### Acknowledgements

The water colour working group wishes to thank the IUCRM and in particular Drs. B. Bean and J.F.R. Gower for providing the opportunity for the exchange of ideas and opinions leading to this report, and N.P. Gordon for editing and typing their section of the manuscript.

Table 1

## Recommendation of CZCS/NET for Surface Truth Measurements

1. Minimal Sea Truth

## 1.1 Optical Measurements

1. Upwelling radiance/irradiance - 4 spectral bands
2. Downwelling irradiance - 4 spectral bands
3. Attenuation coefficient, vertical profile
4. Downwelling irradiance above surface, total and sky component -  
4 spectral bands
5. Path radiance and atmospheric transmittance - 4 spectral bands
6. Secchi disk and Munsell colour

## 1.2 Biochemical Measurements

1. Chlorophyll a and Phaeophytin a, Fluorometric and Spectrophotometric
2. Weight of total particulate matter: 0.45  $\mu$ m filter-millipore  
(Minimum for both 1 & 2: Surface Sample)  
(Preferred: Vertical Profile)
3. Species composition of phytoplankton
4. Absorptance at 350 nm of filtered (.45  $\mu$ m) seawater if  
spectrophotometer available.

## 1.3 Physical

1. Temperature:
  - a. PRT-5 or equivalent
  - b. Towed thermistor                      Optional
  - c. Bucket
2. Salinity (conductivity)
3. Dissolved oxygen
4. Significant wave height
5. Swell
6. Wind speed and direction
7. Total input irradiance (Eppley pyroheliometer or equal)
8. Sky conditions (cloud condition) (all sky camera if available).



Table 1 (Cont'd.)

2. Extended Sea Truth Measurements (For NET Cruise)

All observations indicated for "minimal" set.

Vertical profiles of optical and biochemical measurements to be obtained as applicable and all optical measurements to be spectral. Additionally, the following observations should be added:

- 2.1 1) Volume scattering function at selected wavelengths vs. depth.
- 2) Particle size distribution (Coulter counter) for samples at various significant depths.
- 3) Particulate samples (filtered) for spectral, geochemical, and X-ray analysis.
- 4) Simulated in-situ productivity.
- 5) Quantum measurements (scalar irradiance) vs. depth.
- 6) Inorganic nutrient chemistry.
- 7) Thermal profile of water.

Table 2  
Proposed CZCS follow-on sensor bands

$\lambda$ (nm)	Priority	Application				
		Phytoplankton Pigments	Seston	Yellow Substances	Aerosol	Glitter
400	2	x		x	x	
440	1	x	x			
520	1	x	x			
560	1	x	x			
610	3	x	x			
640	4	x		x		
685	1	x			x	
745	1	x			x	
880	1				x	
1060	1					
2100- 2300	1					x

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## CONCLUSIONS

Many recommendations are made in the course of the 3 working group reports. Some refer to the general philosophy of system or experiment design, some recommend future research and some are quite specific, and are being brought to the attention of the appropriate organizations.

The status of the more specific recommendations is:

### Microwaves (a) Page 10

The overlap in Russian and American passive microwave work suggested that a joint project to obtain aircraft and ground truth for Nimbus G and SEASAT radiometers would be mutually beneficial. NASA has rejected the proposal citing existing cooperation with Europe and Canada and concluding "it is not clear that the proposed joint USA/USSR SEASAT underflight program would provide a significant addition to the overall effort. In view of this factor, and the current climate of US-USSR relations, I do not consider it appropriate to have this item placed on the agenda of the next meeting of the USA/USSR Joint Working Group on the Natural Environment." (letter from A.J. Calio , NASA to Dr. B. Bean, President IUCRM, dated Aug. 15, 1978).

### Microwaves (c) Page 10

The idea of a radio frequency interference survey from space falls in the field of commission E (Interference Environment) of URSI, which is one of the 2 parent bodies of the IUCRM. A letter has been written (Aug. 18) by J. Gower to G.H. Hagn of SRI International, Arlington, Virginia, who is vice-chairman of the commission, asking for comments on this idea.

### Infrared (c) Page 15

Calibration of injection thermometers on reporting ships. This recommendation still needs to be acted upon.

### Infrared (f) and (g) Pages 15 and 16

Standardization of image processing systems: There should be oceanographic input to the AMS working group on this subject, and the oceanographic community should be made aware of this effort towards standardization. Action is needed here. O. Brown and G. Maul are the IUCRM contacts with the subject.

Technical recommendations for standardization have been circulated to the meteorological community by:

Dr. F. Bretherton  
Director, NCAR  
Box 1470  
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U.S.A.

Groups planning to acquire an image processing system in the near future are urged to obtain a copy of these recommendations.

### Water colour Page 27

A project on "Global Assessment of Phytoplankton Pigments" was proposed for the Nimbus G Coastal Zone Colour Scanner. This is to be proposed as an experiment with this instrument by H. Gordon.

Water colour Page 23

Variations of Angstrom coefficient in coastal areas and in the open ocean need to be measured. A project in the Mediterranean or the Sargasso Sea was proposed, and is being considered by the Nimbus Experiment Team.

Recommendations for future research and development were as follows:

Microwaves (b) Page 10

An inexpensive light weight microwave radiometer should be developed for airborne measurements of salinity and sea surface temperature.

Microwaves (d) Page 10

Further laboratory studies are needed on the microwave properties of oil, other pollutants, foam, and sea and fresh water ice.

Microwaves (f) (g) and (h) Page 10

Recommendations were made on future satellite passive microwave scanners, to reduce the need for complex corrections of antenna scan effects, and to plan a mission to concentrate on the oceanographic (lower frequency) observations.

Infrared (a) Page 14

More work is needed on atmospheric effects on infrared radiometry.

Infrared (b) Page 15

The relation of glitter patterns to sea surface thermal patterns needs further investigation.

Infrared (d) Page 15 and Water colour Page 23

A theoretical study of the sampling problem inherent in the comparison of satellite, aircraft and ship data was recommended.

Infrared (e) Page 15

Further study on the skin temperature effect is needed.

Infrared (h) Page 16

Some more thought is needed on optimizing satellite data products for preserving oceanographic information.

Infrared (j) Page 16

The visible bands of the CZCS and AVHRR sensors should be evaluated for moonlit night operation.

Water colour Page 22

Individual investigators should establish the relationship between total seston and spectral radiance for different areas of interest.

Water colour Page 23

Laboratory studies are needed on the absorptive and scattering properties of different species of phytoplankton.



Water colour Page 23

The relation between  $L_w$  (the upwelling spectral radiance) to  $R$  (the irradiance reflection ratio) just below the sea surface needs further investigation.

Water colour Page 25 and 26

Recommendations were agreed on for the design of the next generation water colour scanner, particularly as regards band locations.

The remaining more general recommendations were as follows:

Microwaves (e) Page 10

Both aircraft and satellite measurements are needed to cover phenomena of different scales.

Infrared (i) Page 16

Visible and thermal imagery will remain important to sea ice studies in spite of the potential of microwave methods for all weather operation.

Water colour Page 22

A list of ground truth measurements were agreed on that would give a reasonably complete set of data for interpreting water colour observations.

This report contains many other comments on current research in addition to these recommendations. This document is being circulated to attendees at the meeting and to a selection of the Institute of Ocean Sciences, Patricia Bay mailing list. Additional copies are available from the editor. Any comments or feedback can be incorporated in the final proceedings of the Colloquium.

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## LIST OF ACRONYMS AND DEFINITIONS OF TERMS

1. Groups of people

IUCRM	Inter Union Commission on Radio Meteorology set up and supported jointly by URSI Union Radio-Scientifique Internationale and IUGG International Union of Geodesy and Geophysics
N.E.T.	Nimbus G Experiment Team
NASA	National Aeronautics and Space Administration (USA)
NESS	National Environmental Satellite Service (part of NOAA) (USA)
NOAA	National Oceanic and Atmospheric Administration (USA)
AMS	American Meteorological Society
WMO	World Meteorological Office

2. Satellites

Nimbus	Name of a series of experimental weather satellites
NOAA	Name of a series of polar orbiting weather satellites
GOES	Name of a series of synchronous weather satellites, also called SMS
Tiros	Name of a series of polar orbiting weather satellites due to replace the NOAA series
SEASAT	Name of an experimental satellite for ocean observations with microwave sensors
All the above are U.S. satellite series, individual members of which are identified by a letter before launch, and a number after launch.	
COSMOS	Name covering any Russian satellite
METEOSAT	The geosynchronous European weather satellite similar to the two U.S. GOES satellites.

3. Sensors

VHRR	Very High Resolution Radiometer (on NOAA satellites)
AVHRR	Advanced Very High Resolution Radiometer (on Tiros satellites)

CZCS	Coastal Zone Colour Scanner, on Nimbus G
OCS	Ocean Colour Scanner, airborne prototype of the CZCS
ESMR	Electronically Scanned Microwave Radiometer (on Nimbus 5 and 6)
SMMR	Scanning Multichannel Microwave Radiometer (on SEASAT 1 and Nimbus G)

#### 4. General Terms

GOSSTCOMP	Global Operational Sea Surface Temperature Computation run by NOAA/NESS on NOAA satellite infrared data
LOTRAN	A numerical model of atmospheric transmissivity developed by the Air Force Cambridge Research Laboratories which includes various model atmospheres and a surface haze parameter.
Ocean Station P	Weather ship station at 50°N, 145°W
‰	Parts per thousand
Pixel	Picture element
Seston	Suspended matter in sea water
NEAT	Noise equivalent change in temperature. The r.m.s. noise level of a sensor expressed as a temperature difference.







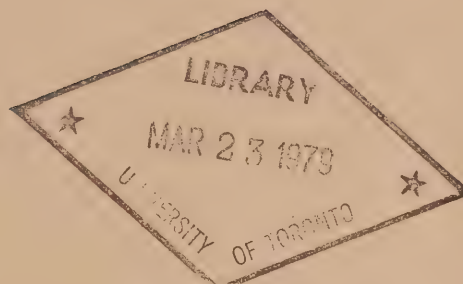




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**OCEANOGRAPHIC OBSERVATIONS  
AT OCEAN STATION P  
DURING MIXED LAYER EXPERIMENT  
August 1, 1978  
Volume 84-B**

by  
**M. Miyake**



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This is a manuscript which has received only limited circulation. On citing this report in a bibliography, the title should be followed by the words "UNPUBLISHED MANUSCRIPT" which is in accordance with accepted bibliographic custom.

# ABSTRACT

Intense physical oceanographic observations were made from the CCGS Quadra during the Mixed Layer Experiment. Profiles of conductivity - temperature - pressure by Guideline System 8700 for Station P location are presented.

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STD Data	7



## INTRODUCTION

Canadian observation of Ocean Weather Station P (Latitude  $50^{\circ} 00' N$ ; Longitude  $145^{\circ} 00' W$ ) was inaugurated in December, 1950. The weather ship has continuously been making routine meteorological observations of the surface (every 3 hours) and upper air (twice daily), plus chemical, biological and physical oceanographic observations. The station is manned by two vessels operated by the Marine Services Branch of the Ministry of Transport. They are the CCGS Vancouver and the CCGS Quadra. Each ship remains at the station for a period of six weeks, and is then relieved by the alternate ship, thus maintaining a continuous watch.

Bathythermograph observations have been made at Station P since July 1952. A program of more extensive oceanographic observations commenced in August 1956. This was extended in April 1959, by the addition of a series of oceanographic stations along the route to and from Station P and the Swiftsure Bank. These stations are known as Line P stations.

The present record contains STD profiles obtained at Ocean Weather Station P from the CCGS Quadra during the period of July 29 to September 14, 1977. All on-station casts are included.

- "Oceanographic Observations at Ocean Station P", Volume 84, will be referred to as Volume 84A. It contains daily STD profiles (62 casts) and hydrographic casts at Station P and Line P stations.
- Volume 84B contains all on-station STD profiles (97 casts).
- Volume 84C contains STD profiles (70 casts) obtained at MILE grid stations and stations toward Kodiak, Alaska.

PROGRAM OF OBSERVATIONS FROM THE CCGS QUADRA - July 29 to September 14, 1977

For the Mixed Layer Experiment, a team from Offshore Oceanography at the Institute of Ocean Sciences, Patricia Bay and the Institute of Oceanography at the University of British Columbia completed STD, XBT and CSP casts. The team, headed by Mikio Miyake, consisted of:

Cor de Jong

Paul Lacroix

Rick Corman

This report contains all STD data (97 casts) collected on-station by the MILE group.

The 62 casts included in Volume 84 of the Pacific Marine Science Report series "Oceanographic Observations at Ocean Station P", are repeated here with a different format.

OBSERVATION PROCEDURES

STP profiles were taken with a Guideline Model 8700 STP system and the data were logged onto a 9-track magnetic tape using a Hewlett-Packard 2100A mini-computer and a 7970B digital tape unit.

COMPUTATIONS

The STP raw data were calibrated and salinity was calculated using the RIBE-HOWE equation on a HP2116B at the Institute of Ocean Sciences, Patricia Bay at Sidney. A 9-track digital tape containing 1 reading per metre was created. This tape was used on a Univac 1106 to produce the data listings and plots in the report.

The headings for the data listings are explained as follows:

PRESS	is pressure (decibars)
TEMP	is temperature (degrees Celsius)
SAL	is salinity (parts per thousand)
DEPTH	is reported in metres

SIGMA-T	is specific gravity anomaly
SVA	is specific volume anomaly
DELTA D	is geopotential anomaly (J/Kg)
POT EN	is potential energy in units of $10^8$ ergs/cm <sup>2</sup>
SOUND	is velocity of sound in m/sec



## LOG OF STD OBSERVATIONS

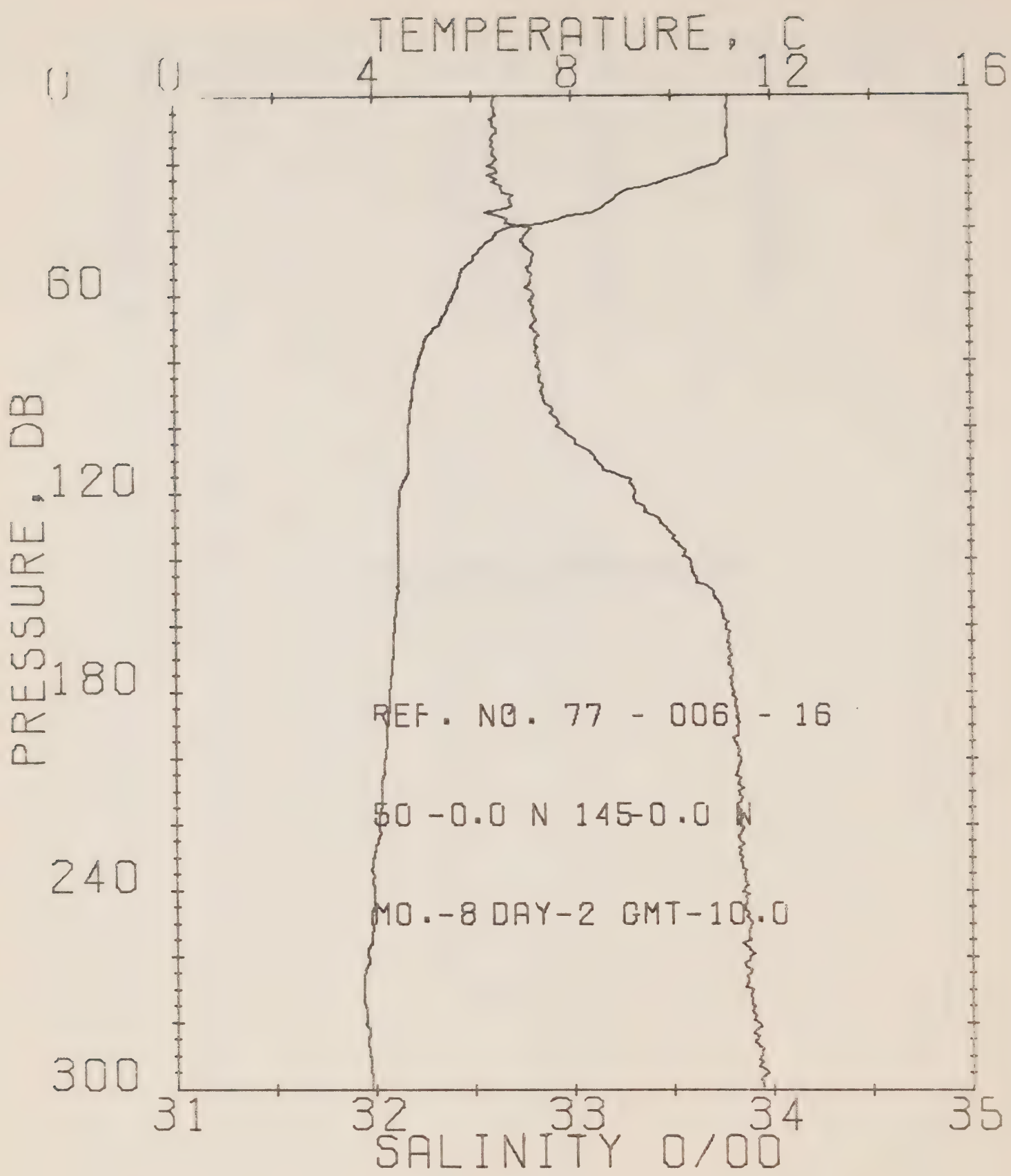
CONSEC. #	POSITION	DATE (Z)	TIME (Z)	STD	COMMENTS
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018	P	03/08/77	0326	1,420	
021	P	04/08/77	0315	1,420	
025	P	04/08/77	2027	310	
026	P	05/08/77	0153	310	
028	P	06/08/77	0255	300	
030	P	08/08/77	0254	310	
032	P	08/08/77	1915	-	
036	P	10/08/77	1724	1,420	
039	P	11/08/77	1720	1,420	
041	P	11/08/77	2112	300	
042	P	12/08/77	0244	310	
044A	P	13/08/77	0243	310	
047	P	14/08/77	0247	300	
050	P	15/08/77	0239	310	
053	P	16/08/77	0247	300	
054	P	16/08/77	1705	1,420	
057	P	17/08/77	1710	1,420	
066	P	20/08/77	0105	310	
069	P	21/08/77	0250	310	
071	P	22/08/77	0248	310	
074	P	23/08/77	2031	160	
075	P	23/08/77	2355	165	
076	P	24/08/77	0255	310	
077	P	24/08/77	0644	310	
078	P	24/08/77	0829	310	
079	P	24/08/77	1452	300	
080	P	24/08/77	1713	1,420	
090	P	25/08/77	1714	1,420	
091A	P	25/08/77	2028	300	
092	P	26/08/77	0000	310	
093	P	26/08/77	0247	310	
094	P	26/08/77	0549	310	
095	P	26/08/77	0843	310	
096	P	26/08/77	1450	310	
098	P	26/08/77	2358	310	
099	P	27/08/77	0250	310	
100	P	27/08/77	0600	310	

CONSEC. #	POSITION	DATE(Z)	TIME (Z)	STD	COMMENTS
101	P	27/08/77	0823	310	
102	P	27/08/77	1453	310	
104	P	28/08/77	0132	310	
105	P	28/08/77	0609	310	
106	P	28/08/77	0837	310	
107	P	28/08/77	1453	310	
110	P	28/08/77	2347	310	
111	P	29/08/77	0251	310	
112	P	29/08/77	0558	300	
113	P	29/08/77	0830	300	
114	P	29/08/77	1453	300	
116	P	29/08/77	2023	300	
127	P	30/08/77	2034	300	
128	P	30/08/77	2346	300	
129	P	31/08/77	0256	300	
130	P	31/08/77	0603	300	
131	P	31/08/77	0835	300	
132	P	31/08/77	1452	300	
134	P	31/08/77	2029	300	
135	P	01/09/77	0000	300	
136	P	01/09/77	0318	300	
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157	P	03/09/77	2347	300	
158	P	04/09/77	0256	300	
159	P	04/09/77	0602	300	
160	P	04/09/77	0840	300	
161	P	04/09/77	1454	300	
163	P	04/09/77	2034	300	
164	P	04/09/77	2349	300	
165	P	05/09/77	0300	300	
166	P	05/09/77	0559	300	
167	P	05/09/77	0832	300	
168	P	05/09/77	1452	300	
170	P	05/09/77	2043	300	
171	P	05/09/77	2349	300	
172	P	06/09/77	0253	300	
173	P	06/09/77	0604	300	
174	P	06/09/77	0833	300	
175	P	06/09/77	1452	300	
177	P	06/09/77	2032	300	
178	P	06/09/77	2048	300	
179	P	07/09/77	0257	300	

CONSEC. #	POSITION	DATE (Z)	TIME (Z)	STD	COMMENTS
180	P	07/09/77	0557	300	
181	P	07/09/77	0833	300	
182	P	07/09/77	1512	300	
183	P	07/09/77	1719	300	
193	P	08/09/77	1717	1420	
194	P	08/09/77	2028	300	
204	P	09/09/77	2353	1420	
206	P	10/09/77	0559	300	
208	P	10/09/77	2348	300	

STD DATA OBTAINED ON CRUISE P-77-6





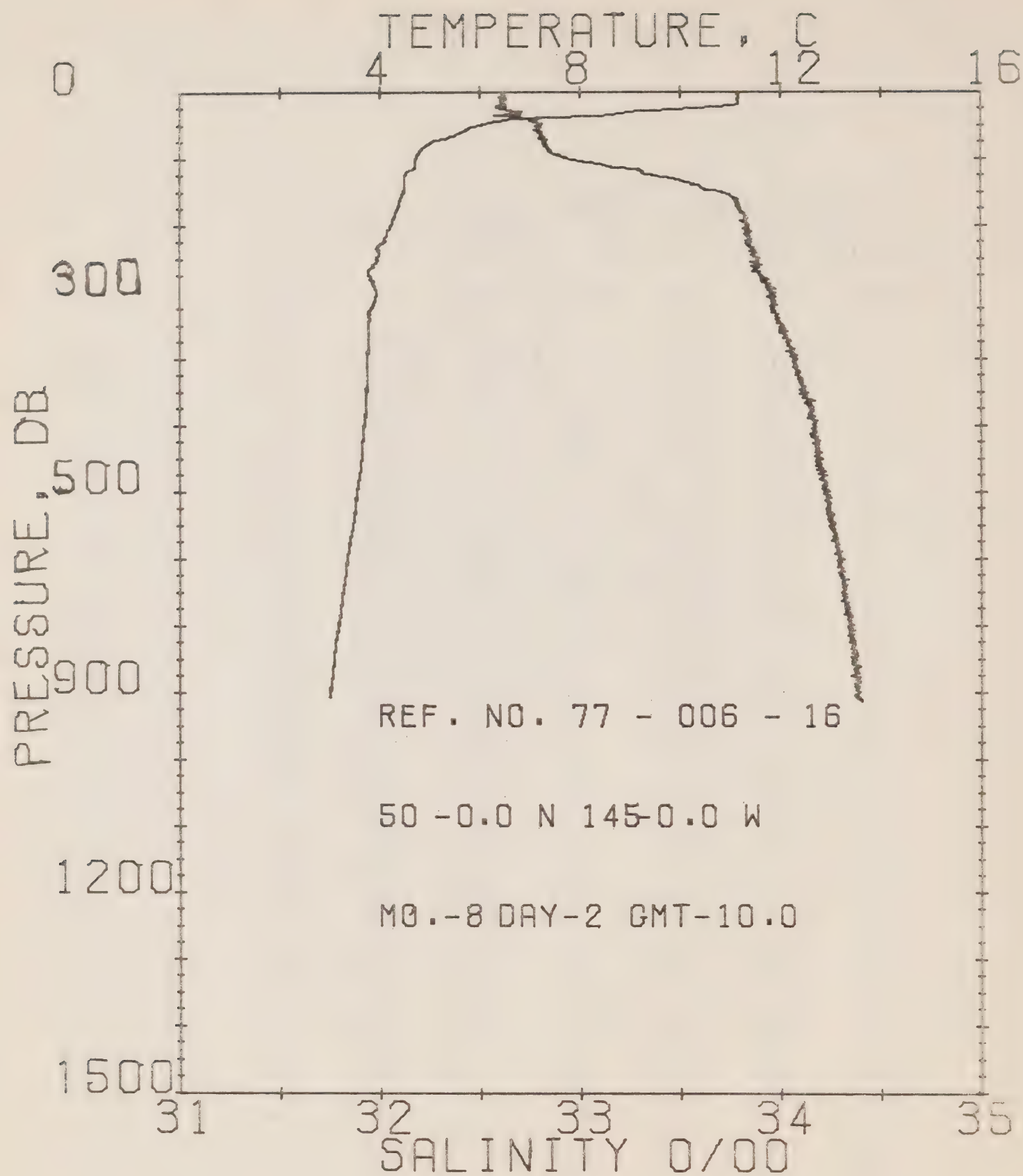
## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8- 16

DATE 2/ 8/ 77

POSITION 50- .0N, 145- .0W GMI 10.0

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	11.14	32.81	0	24.92	304.5	.00	.00	1491.
5	11.14	32.81	5	24.91	304.9	.15	.00	1492.
10	11.13	32.82	10	24.93	303.9	.30	.02	1492.
15	11.14	32.80	15	24.91	305.9	.46	.04	1492.
20	10.95	32.81	20	24.95	301.7	.61	.06	1491.
25	9.90	32.83	25	25.14	283.7	.76	.10	1487.
30	8.90	32.70	30	25.36	262.8	.89	.15	1484.
35	8.39	32.57	35	25.34	265.0	1.02	.18	1482.
40	8.06	32.79	40	25.75	226.1	1.15	.22	1475.
45	8.23	32.76	45	25.78	222.8	1.26	.27	1474.
50	5.97	32.80	50	25.84	217.0	1.37	.30	1473.
55	5.73	32.79	55	25.87	214.7	1.48	.38	1472.
60	5.60	32.81	60	25.89	212.4	1.50	.45	1472.
65	5.47	32.80	65	25.90	211.5	1.60	.51	1471.
70	5.21	32.80	70	25.93	208.9	1.80	.59	1470.
75	5.01	32.82	75	25.97	205.2	1.90	.66	1469.
80	4.91	32.83	80	25.99	203.2	2.00	.74	1469.
90	4.78	32.85	89	26.02	200.6	2.20	.92	1469.
100	4.71	32.92	99	26.09	194.3	2.40	1.11	1469.
110	4.69	33.11	109	26.24	179.9	2.59	1.31	1469.
120	4.52	33.31	119	26.42	163.1	2.76	1.51	1469.
130	4.49	33.46	129	26.54	151.8	2.92	1.71	1469.
140	4.48	33.59	139	26.64	142.4	3.06	1.91	1469.
150	4.46	33.70	149	26.73	133.5	3.20	2.12	1469.
160	4.40	33.77	159	26.79	128.0	3.33	2.32	1469.
170	4.35	33.78	169	26.81	126.7	3.46	2.54	1469.
180	4.30	33.80	179	26.83	124.5	3.50	2.76	1469.
190	4.25	33.82	189	26.85	122.7	3.71	3.00	1469.
200	4.20	33.84	199	26.86	121.4	3.83	3.24	1469.
210	4.14	33.82	209	26.86	121.7	3.95	3.49	1469.
220	4.09	33.84	218	26.86	119.9	4.07	3.76	1469.
230	3.95	33.85	228	26.90	118.2	4.19	4.03	1469.
240	3.97	33.85	238	26.90	118.2	4.31	4.31	1469.
250	3.94	33.89	248	26.95	114.9	4.43	4.60	1469.
260	3.85	33.88	258	26.93	115.0	4.54	4.90	1469.
270	3.75	33.90	268	26.96	112.8	4.66	5.21	1469.
280	3.60	33.91	278	26.97	112.1	4.77	5.53	1469.
290	3.68	33.94	288	26.98	111.1	4.88	5.86	1470.
300	3.92	33.95	298	26.96	110.6	4.90	5.19	1470.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6- 16

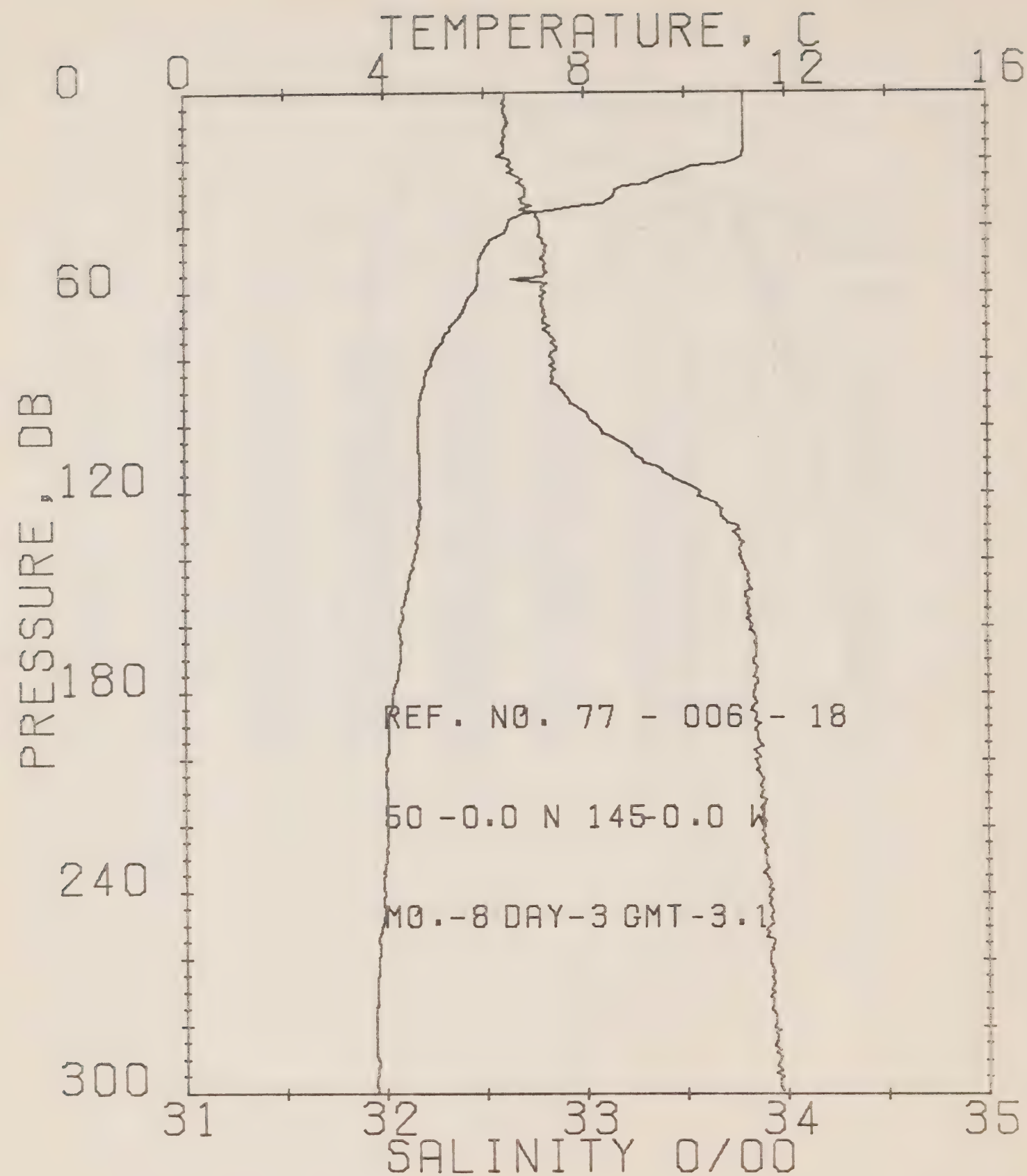
DATE 2/ 8/77

POSITION 50- .0N, 145- .0W

GMT 10.0

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	11.14	32.61	0	24.92	304.6	.00	.00	1491.
50	5.97	32.60	50	25.84	217.0	1.37	.35	1475.
100	4.71	32.92	99	26.09	194.3	2.40	1.11	1469.
150	4.46	33.70	149	26.73	133.5	3.20	2.12	1469.
200	4.20	33.84	199	26.86	121.4	3.83	3.24	1469.
250	3.94	33.89	248	26.93	114.9	4.43	4.00	1459.
300	3.92	33.95	296	26.96	110.6	4.90	5.19	1470.
350	3.76	34.01	347	27.04	105.5	5.54	7.99	1470.
400	3.74	34.07	397	27.10	100.4	6.05	9.97	1471.
450	3.72	34.10	446	27.12	98.5	6.55	12.12	1472.
500	3.67	34.16	496	27.17	94.2	7.03	14.40	1472.
550	3.62	34.20	545	27.21	91.1	7.40	16.92	1473.
600	3.52	34.24	595	27.25	87.4	7.95	19.50	1474.
650	3.44	34.26	644	27.28	85.3	8.38	22.37	1474.
700	3.33	34.30	694	27.32	81.9	8.80	25.25	1475.
750	3.24	34.31	743	27.33	80.3	9.21	26.22	1475.
800	3.15	34.36	793	27.36	76.1	9.60	31.35	1475.
850	3.07	34.35	842	27.39	75.8	9.98	34.32	1475.
900	2.99	34.39	891	27.42	72.4	10.35	37.32	1475.





## OFFSHORE OCEANOGRAPHY GROUP

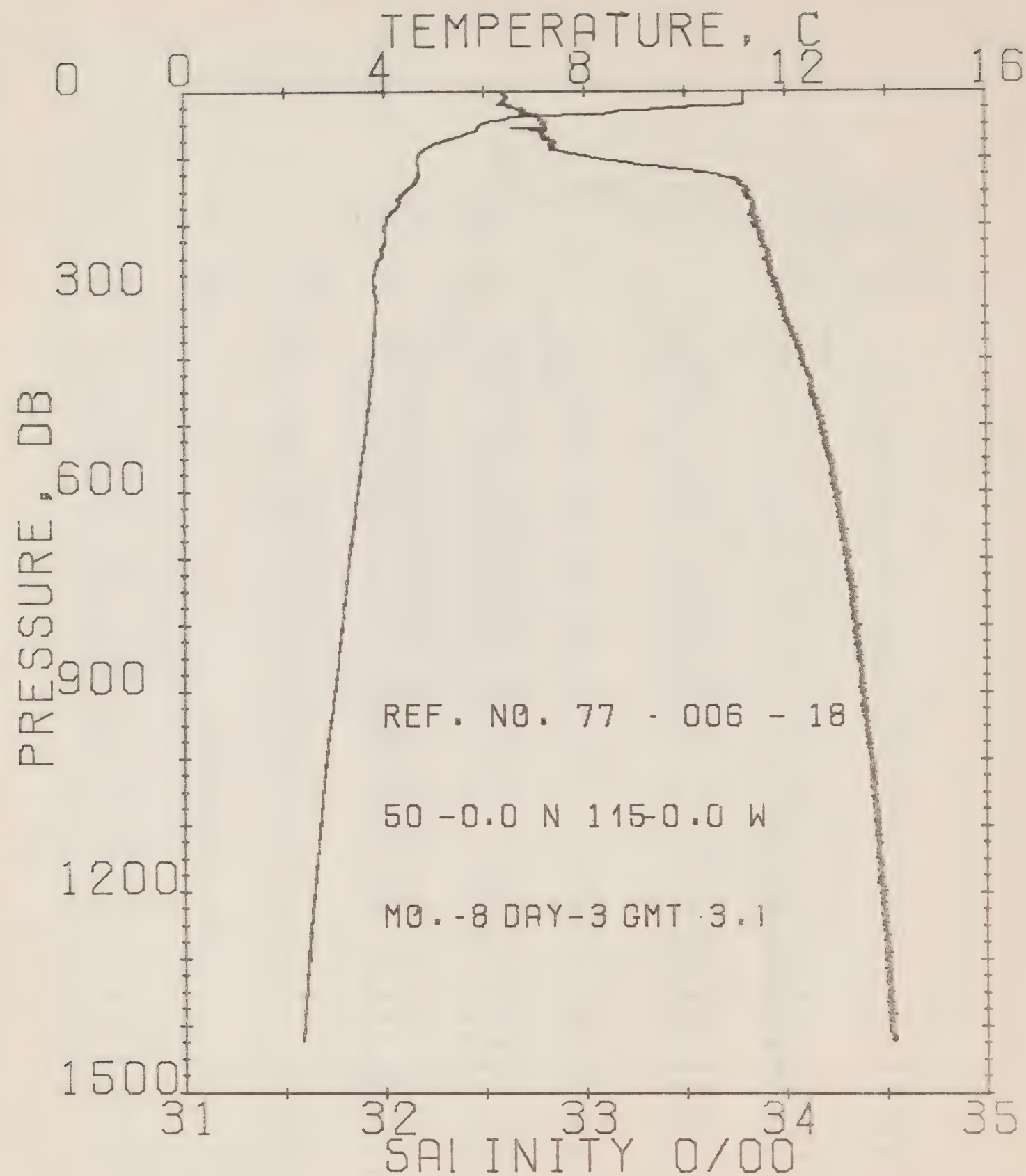
REFERENCE NO. 77- 6- 18

DATE 3/ 8/ 77

POSITION 50- .0N, 145- .0W

GMT 3.1

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	11.16	32.61	0	24.91	305.6	.00	.00	1492.
5	11.17	32.60	5	24.90	306.2	.15	.00	1492.
10	11.16	32.61	10	24.91	305.0	.31	.02	1492.
15	11.17	32.59	15	24.90	306.6	.46	.04	1492.
20	11.05	32.62	20	24.94	302.7	.61	.06	1491.
25	9.51	32.67	25	25.24	274.6	.76	.10	1485.
30	8.60	32.71	30	25.41	258.3	.89	.13	1485.
35	7.37	32.68	35	25.57	242.9	1.02	.17	1478.
40	6.48	32.78	40	25.77	224.3	1.13	.22	1475.
45	6.08	32.80	45	25.83	218.7	1.24	.27	1473.
50	5.90	32.78	50	25.84	217.3	1.35	.32	1473.
55	5.88	32.79	55	25.85	216.4	1.46	.36	1473.
60	5.76	32.80	60	25.87	214.4	1.57	.44	1472.
65	5.56	32.80	65	25.89	212.2	1.67	.51	1471.
70	5.51	32.82	70	25.94	208.0	1.78	.58	1471.
75	5.12	32.84	75	25.97	204.9	1.89	.63	1470.
80	4.93	32.84	80	26.00	202.7	1.99	.74	1469.
90	4.73	32.89	89	26.06	196.5	2.19	.91	1469.
100	4.68	33.06	99	26.19	183.9	2.38	1.10	1469.
110	4.69	33.28	109	26.37	167.5	2.55	1.26	1469.
120	4.71	33.57	119	26.60	145.9	2.71	1.47	1470.
130	4.65	33.75	129	26.75	131.9	2.85	1.65	1470.
140	4.56	33.78	139	26.78	129.2	2.98	1.82	1470.
150	4.41	33.80	149	26.81	125.9	3.10	2.01	1469.
160	4.27	33.82	159	26.85	122.6	3.23	2.21	1469.
170	4.29	33.84	169	26.85	122.1	3.35	2.41	1469.
180	4.14	33.85	179	26.87	120.9	3.47	2.60	1469.
190	4.05	33.85	189	26.89	118.7	3.59	2.80	1469.
200	4.01	33.84	199	26.89	118.9	3.71	3.00	1469.
210	4.02	33.86	208	26.91	116.5	3.83	3.20	1469.
220	4.02	33.89	218	26.92	115.7	3.94	3.39	1469.
230	4.00	33.89	228	26.93	115.5	4.06	3.60	1469.
240	3.96	33.91	238	26.95	113.4	4.17	4.10	1469.
250	3.90	33.91	248	26.96	112.9	4.29	4.41	1469.
260	3.84	33.92	258	26.96	112.2	4.40	4.70	1469.
270	3.81	33.93	268	26.98	110.9	4.51	5.00	1469.
280	3.79	33.94	278	26.98	110.4	4.62	5.30	1469.
290	3.63	33.96	288	27.00	109.0	4.73	5.60	1469.
300	3.51	33.97	298	27.01	108.4	4.84	5.90	1470.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6- 10

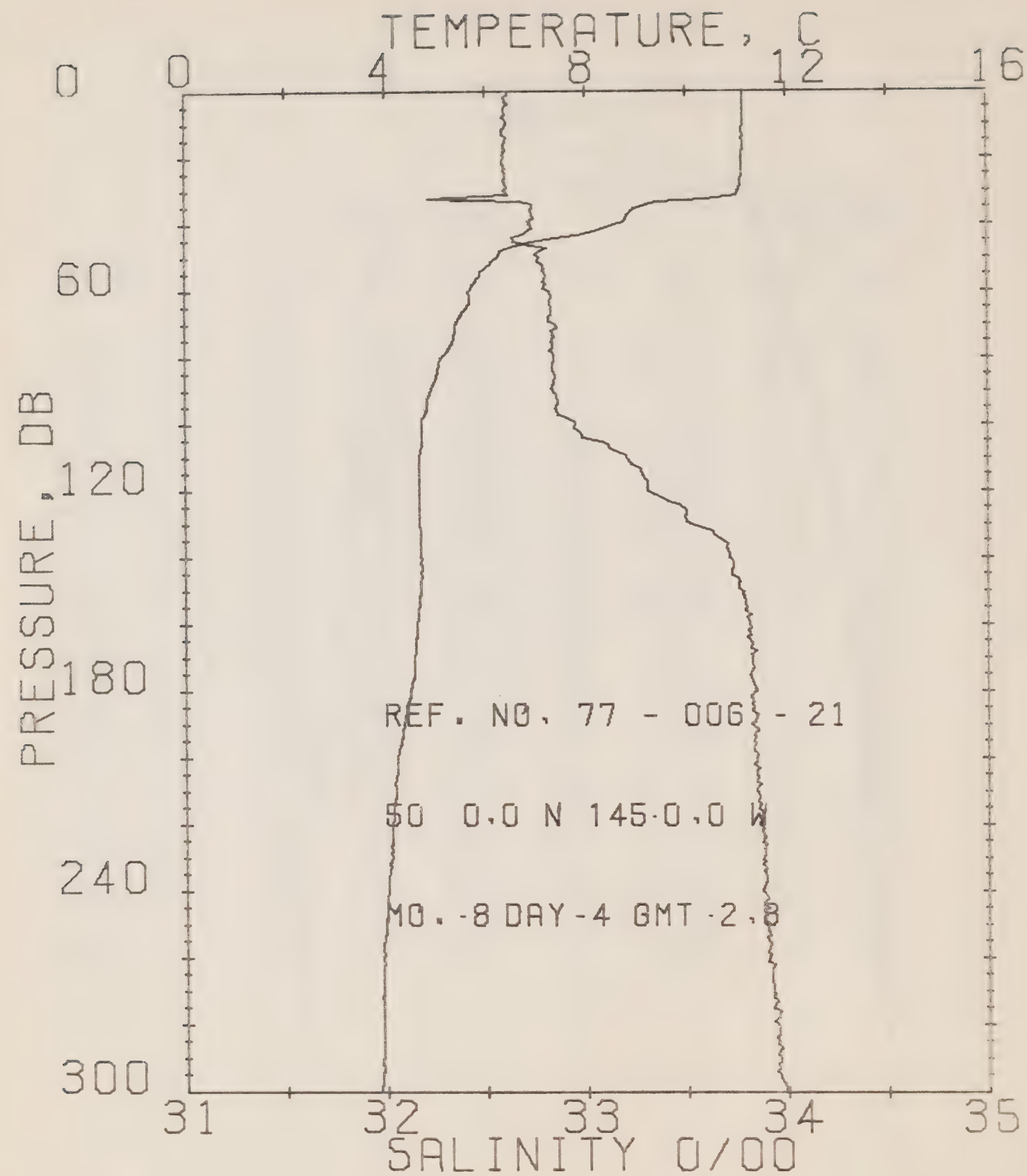
DATE 3/ 8/77

POSITION 50- .0N, 145- .0W

GMT 3.1

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	11.10	32.01	0	24.91	305.6	.00	.00	1492.
50	5.90	32.70	50	25.84	217.3	1.35	.32	1473.
100	4.08	33.00	99	26.19	183.9	2.38	1.10	1469.
150	4.41	33.00	149	26.31	125.9	3.10	2.01	1469.
200	4.01	33.04	199	26.39	118.9	3.71	3.09	1469.
250	3.90	33.91	240	26.90	112.9	4.29	4.41	1469.
300	3.01	33.97	290	27.01	108.4	4.84	5.96	1470.
350	3.81	34.02	347	27.05	105.0	5.38	7.74	1470.
400	3.77	34.00	397	27.10	100.1	5.80	9.69	1471.
450	3.71	34.12	440	27.14	96.9	6.38	11.61	1472.
500	3.03	34.19	490	27.20	91.6	6.85	14.10	1472.
550	3.55	34.21	545	27.23	89.4	7.30	16.52	1473.
600	3.46	34.25	595	27.27	85.9	7.74	19.09	1473.
650	3.37	34.28	644	27.30	83.1	8.16	21.70	1474.
700	3.28	34.31	694	27.33	80.6	8.57	24.60	1474.
750	3.21	34.33	745	27.36	78.2	8.97	27.53	1475.
800	3.13	34.30	793	27.38	75.7	9.36	30.02	1475.
850	3.07	34.37	842	27.40	74.5	9.74	33.81	1476.
900	2.99	34.39	891	27.43	72.2	10.11	37.11	1476.
950	2.90	34.40	941	27.44	71.2	10.47	40.51	1477.
1000	2.82	34.42	990	27.46	69.3	10.82	43.99	1477.
1050	2.75	34.44	1040	27.48	67.4	11.16	47.54	1478.
1100	2.70	34.45	1089	27.50	60.0	11.40	51.19	1479.
1150	2.55	34.40	1130	27.51	65.0	11.82	54.90	1479.
1200	2.58	34.40	1180	27.53	63.2	12.14	58.70	1480.
1250	2.51	34.49	1237	27.55	61.9	12.45	62.00	1480.
1300	2.47	34.50	1280	27.56	60.9	12.76	60.02	1481.
1350	2.42	34.51	1330	27.57	59.9	13.06	70.07	1482.
1400	2.37	34.51	1380	27.58	59.4	13.35	74.80	1482.





## OFFSHORE OCEANOGRAPHY GROUP

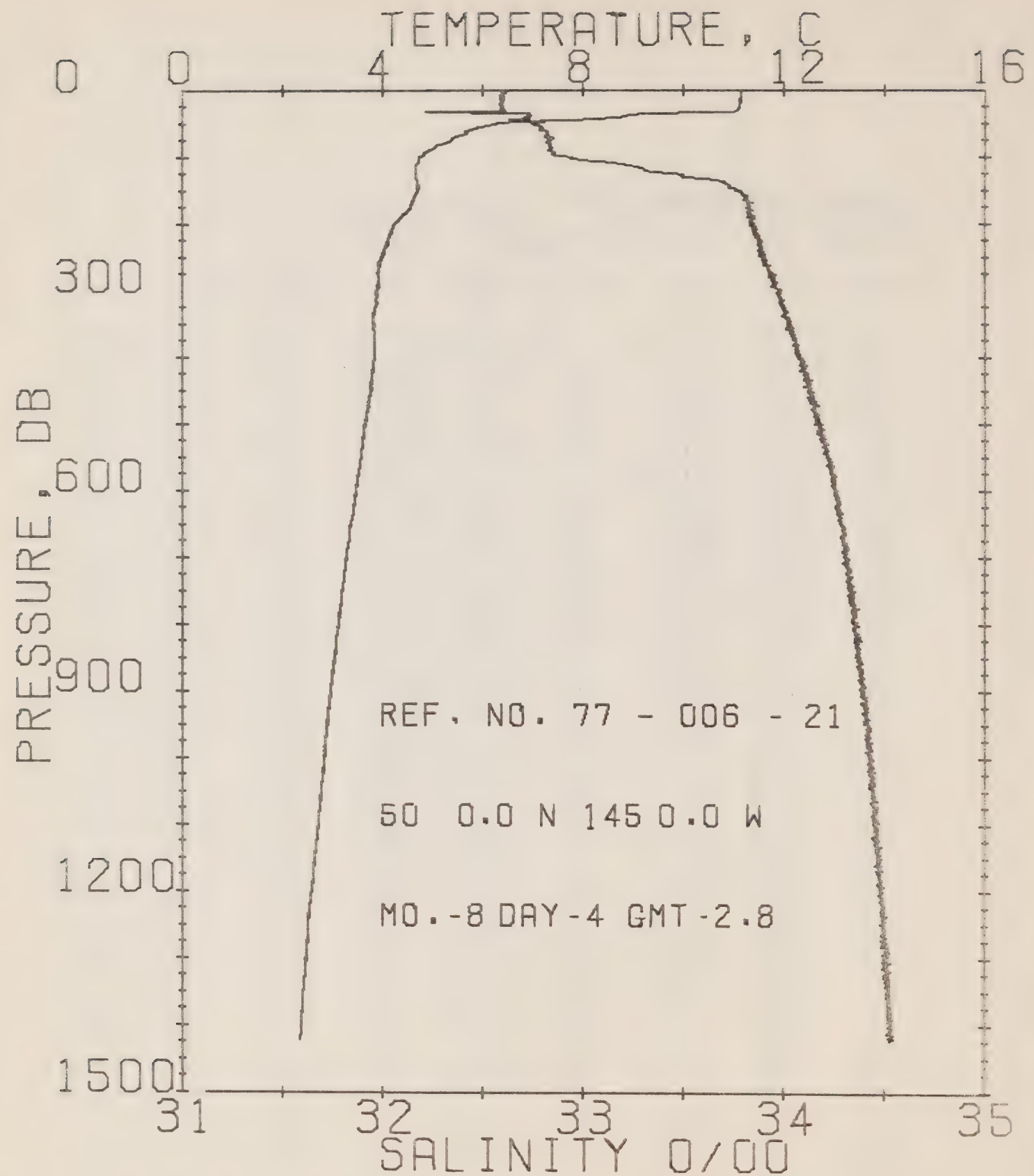
REFERENCE NO. 77- 6- 21

DATE 4/ 8/77

POSITION 50- 00N, 145- 00W

GMT 2.8

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	11.15	32.61	0	24.92	304.6	.00	.00	1491.
5	11.15	32.59	5	24.90	306.1	.15	.00	1492.
10	11.13	32.60	10	24.91	305.4	.31	.02	1492.
15	11.13	32.60	15	24.91	305.8	.46	.04	1492.
20	11.13	32.59	20	24.90	306.5	.61	.06	1492.
25	11.11	32.60	25	24.91	305.7	.76	.10	1492.
30	11.05	32.59	30	24.92	305.2	.92	.14	1492.
35	8.99	32.73	35	25.37	262.1	1.06	.19	1484.
40	8.59	32.72	40	25.42	257.6	1.19	.24	1483.
45	8.97	32.64	45	25.59	241.4	1.32	.29	1477.
50	8.21	32.77	50	25.79	222.4	1.43	.35	1474.
55	5.88	32.80	55	25.86	215.9	1.54	.41	1473.
60	5.60	32.61	60	25.89	212.6	1.65	.47	1472.
65	5.61	32.65	65	25.91	211.0	1.75	.54	1472.
70	5.40	32.64	70	25.94	207.5	1.86	.61	1471.
75	5.33	32.62	75	25.94	208.0	1.96	.69	1471.
80	5.10	32.64	80	25.98	204.6	2.07	.77	1470.
90	4.89	32.64	89	26.00	202.7	2.27	.94	1469.
100	4.72	32.95	99	26.10	192.6	2.47	1.14	1469.
110	4.67	33.20	109	26.31	173.1	2.65	1.35	1469.
120	4.67	33.31	119	26.39	165.2	2.82	1.55	1469.
130	4.67	33.51	129	26.56	149.8	2.98	1.75	1470.
140	4.71	33.71	139	26.71	135.4	3.12	1.92	1470.
150	4.69	33.76	149	26.77	130.2	3.25	2.11	1471.
160	4.62	33.61	159	26.80	127.1	3.38	2.32	1470.
170	4.56	33.65	169	26.82	125.6	3.50	2.55	1470.
180	4.48	33.64	179	26.84	123.5	3.63	2.75	1470.
190	4.35	33.65	189	26.84	123.6	3.75	2.99	1470.
200	4.22	33.65	199	26.87	120.6	3.87	3.25	1469.
210	4.18	33.65	209	26.87	120.6	3.99	3.48	1470.
220	4.12	33.66	218	26.89	118.7	4.11	3.74	1469.
230	4.09	33.67	228	26.91	117.6	4.23	4.01	1469.
240	4.01	33.68	238	26.91	116.8	4.35	4.25	1469.
250	3.97	33.90	248	26.94	114.4	4.46	4.50	1469.
260	3.93	33.91	258	26.95	113.8	4.58	4.87	1469.
270	3.91	33.93	268	26.96	112.3	4.69	5.16	1469.
280	3.93	33.94	278	26.97	111.4	4.80	5.49	1470.
290	3.91	33.96	288	26.99	110.0	4.91	5.81	1470.
300	3.88	33.98	298	27.01	107.9	5.02	6.14	1470.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 17- 8- 21

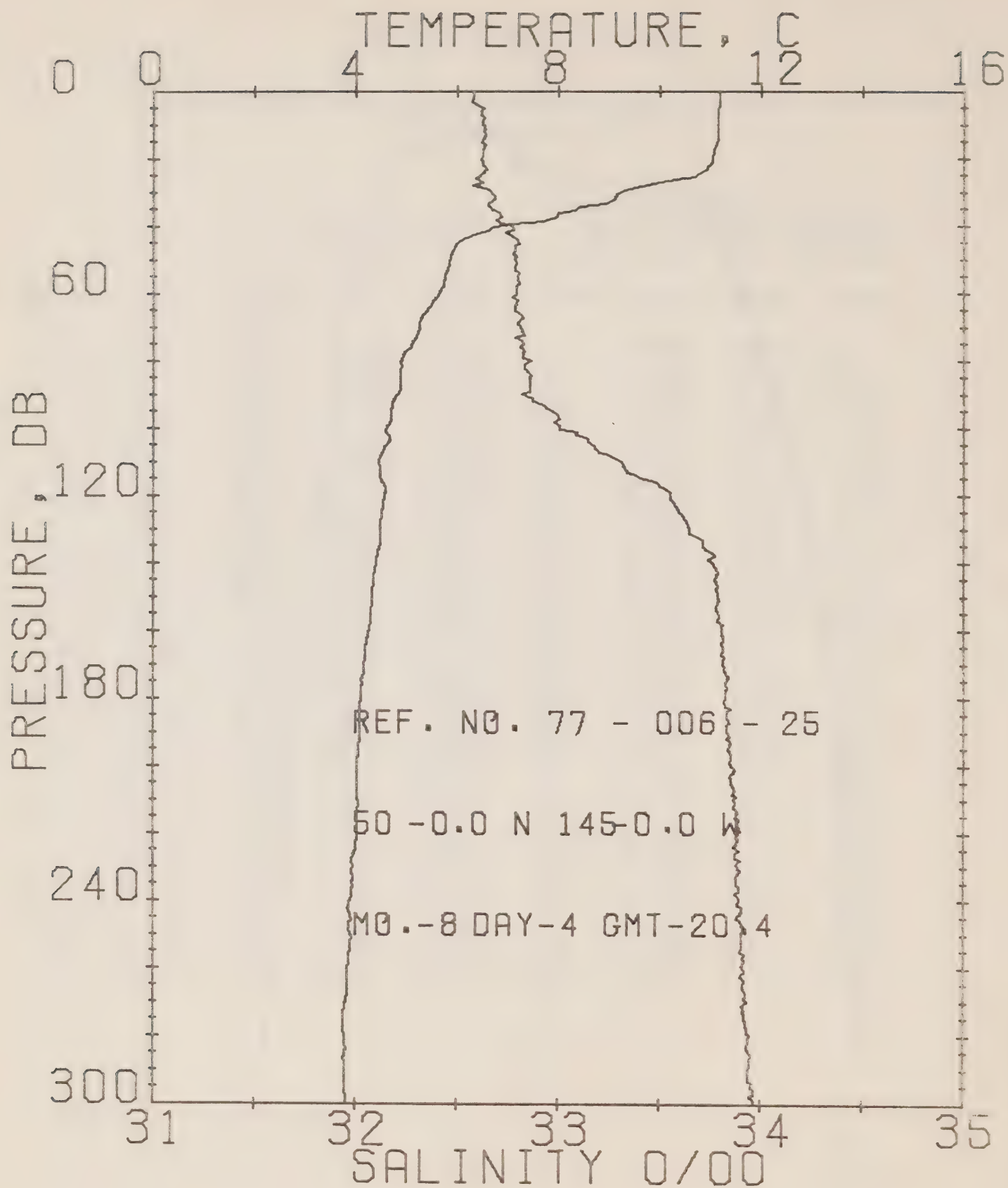
DATE 4/ 8/77

POSITION 50- .0N, 145- .0W

GMT 2.8

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA J	POT. EN	SOUND
0	11.15	32.81	0	24.92	304.6	.00	.00	1491.
50	8.21	32.77	50	25.79	222.4	1.43	.35	1474.
100	4.72	32.95	99	26.10	192.6	2.47	1.14	1469.
150	4.09	33.78	149	26.77	130.2	3.25	2.11	1471.
200	4.22	33.85	199	26.87	120.6	3.87	3.23	1469.
250	3.97	33.90	248	26.94	114.4	4.46	4.58	1469.
300	3.88	33.98	298	27.01	107.9	5.02	6.14	1470.
350	3.83	34.03	347	27.06	104.1	5.55	7.91	1471.
400	3.84	34.07	397	27.09	101.6	6.07	9.67	1471.
450	3.76	34.12	446	27.14	97.4	6.56	12.01	1472.
500	3.64	34.18	496	27.20	92.0	7.04	14.31	1472.
550	3.56	34.22	545	27.23	88.8	7.49	16.74	1473.
600	3.48	34.27	595	27.28	84.6	7.93	19.28	1475.
650	3.35	34.28	644	27.30	82.6	8.35	21.90	1474.
700	3.26	34.31	694	27.33	80.1	8.75	24.75	1474.
750	3.18	34.35	743	27.37	76.6	9.15	27.66	1475.
800	3.11	34.36	793	27.39	75.2	9.53	30.70	1475.
850	3.03	34.38	842	27.41	73.6	9.90	33.88	1476.
900	2.95	34.40	891	27.43	71.6	10.27	37.00	1476.
950	2.89	34.42	941	27.46	69.3	10.62	40.40	1477.
1000	2.83	34.44	990	27.47	67.9	10.97	43.87	1477.
1050	2.76	34.44	1040	27.48	67.5	11.31	47.41	1478.
1100	2.71	34.46	1089	27.50	65.8	11.64	51.00	1479.
1150	2.64	34.48	1138	27.53	63.3	11.96	54.70	1479.
1200	2.57	34.49	1188	27.54	62.3	12.28	58.59	1480.
1250	2.51	34.49	1237	27.55	61.9	12.59	62.46	1480.
1300	2.47	34.50	1286	27.56	60.9	12.90	66.41	1481.
1350	2.41	34.52	1336	27.57	59.5	13.20	70.45	1482.
1400	2.36	34.53	1385	27.59	57.9	13.49	74.50	1482.





## OFFSHORE OCEANOGRAPHY GROUP

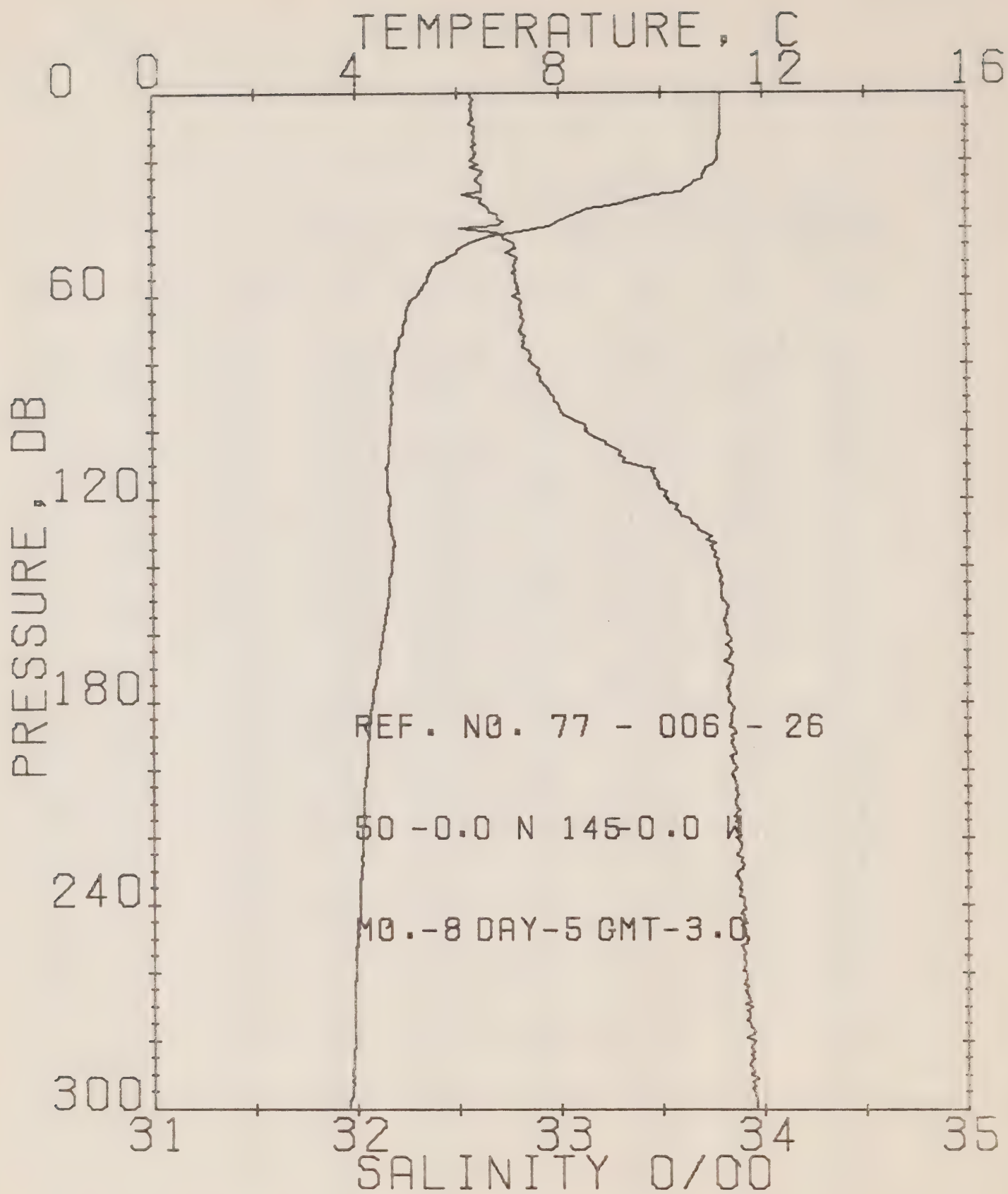
REFERENCE NO. 77- 6- 25

DATE 4/ 8/77

POSITION 50- 00N, 145- 00W

GMT 20.5

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	11.18	32.58	0	24.28	307.7	.00	.00	1492.
5	11.15	32.63	5	24.93	303.5	.15	.00	1492.
10	11.15	32.63	10	24.93	303.8	.31	.02	1492.
15	11.12	32.62	15	24.93	304.0	.46	.03	1492.
20	11.04	32.62	20	24.94	302.4	.61	.06	1491.
25	10.70	32.61	25	24.99	297.6	.76	.10	1490.
30	9.18	32.67	30	25.29	269.6	.90	.14	1485.
35	8.55	32.67	35	25.42	257.6	1.03	.18	1482.
40	6.72	32.77	40	25.72	228.3	1.16	.23	1476.
45	5.98	32.61	45	25.85	216.5	1.27	.27	1473.
50	5.64	32.79	50	25.85	216.3	1.39	.30	1472.
55	5.75	32.60	55	25.87	214.5	1.49	.35	1472.
60	5.64	32.79	60	25.88	213.9	1.59	.45	1472.
65	5.59	32.78	65	25.90	211.7	1.70	.52	1471.
70	5.24	32.61	70	25.94	208.1	1.80	.59	1470.
75	5.09	32.63	75	25.97	205.4	1.90	.66	1470.
80	4.88	32.87	80	26.02	200.2	2.01	.74	1469.
90	4.60	32.62	89	26.00	202.7	2.21	.92	1469.
100	4.60	33.01	99	26.17	186.7	2.40	1.10	1468.
110	4.47	33.51	109	26.42	162.8	2.57	1.29	1466.
120	4.56	33.55	119	26.60	145.5	2.73	1.47	1469.
130	4.49	33.65	129	26.66	137.9	2.87	1.65	1469.
140	4.39	33.76	139	26.78	128.8	3.00	1.83	1469.
150	4.33	33.79	149	26.81	125.9	3.13	2.02	1469.
160	4.25	33.61	159	26.84	123.7	3.25	2.22	1469.
170	4.16	33.61	169	26.85	122.5	3.39	2.43	1469.
180	4.10	33.63	179	26.87	120.7	3.50	2.64	1469.
190	4.07	33.64	189	26.88	120.0	3.62	2.87	1469.
200	4.04	33.65	199	26.89	118.4	3.74	3.11	1469.
210	4.05	33.67	208	26.90	117.5	3.86	3.35	1469.
220	4.02	33.69	216	26.92	115.9	3.97	3.61	1469.
230	3.93	33.69	228	26.93	115.1	4.09	3.87	1469.
240	3.87	33.89	238	26.94	114.0	4.20	4.15	1469.
250	3.92	33.91	246	26.95	113.3	4.32	4.45	1469.
260	3.85	33.91	256	26.96	112.6	4.43	4.72	1469.
270	3.80	33.93	266	26.98	110.9	4.54	5.03	1469.
280	3.79	33.95	276	26.99	109.7	4.65	5.34	1469.
290	3.78	33.94	286	26.99	109.9	4.76	5.66	1469.
300	3.62	33.96	296	27.00	108.8	4.87	5.99	1470.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6- 26

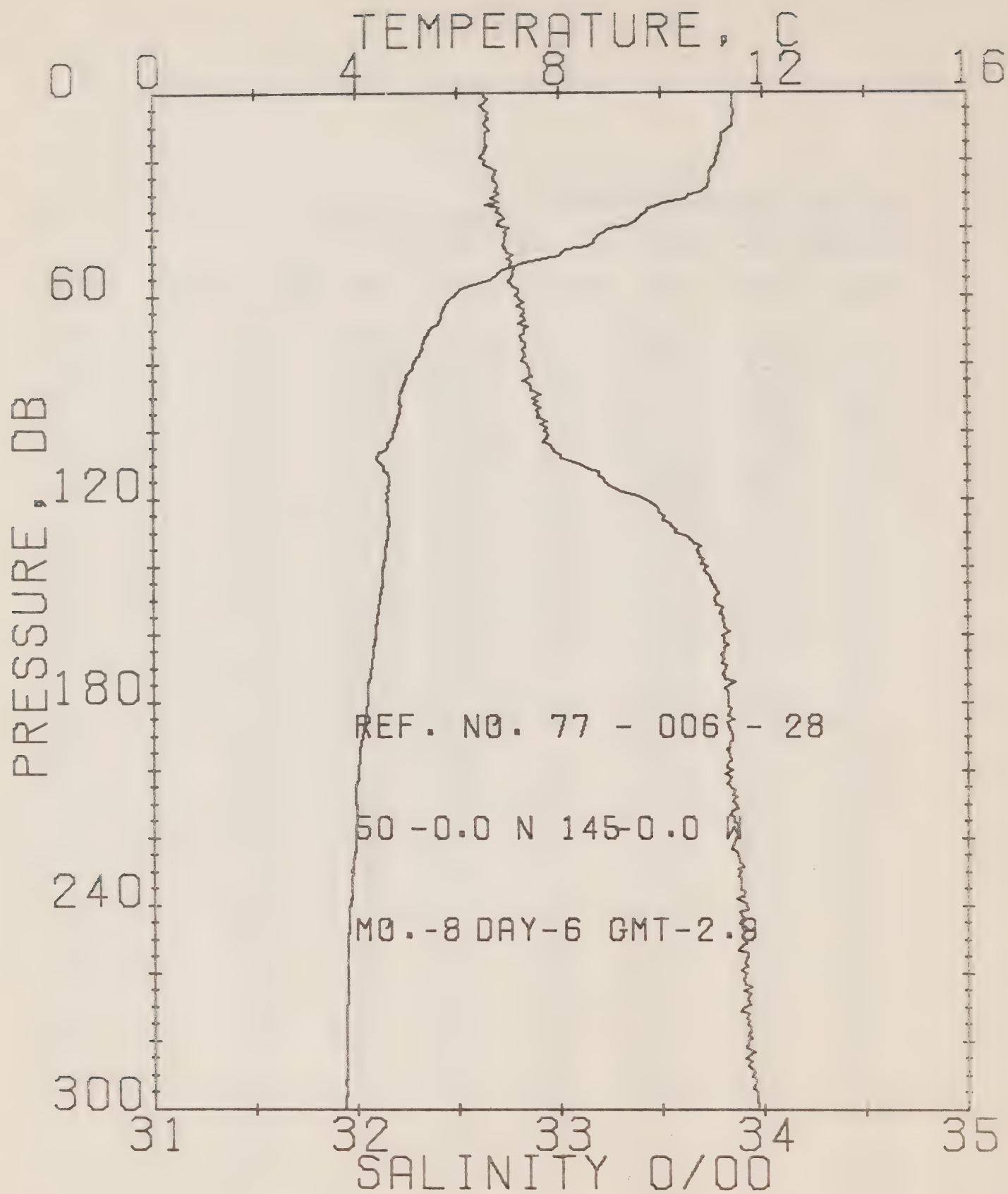
DATE 5/ 8/77

POSITION 50- 00N, 145- 00W

GMT 3.0

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	11.17	32.56	0	24.87	308.8	.00	.00	1492.
5	11.17	32.57	5	24.88	308.5	.15	.00	1492.
10	11.16	32.59	10	24.89	307.1	.31	.02	1492.
15	11.13	32.59	15	24.90	306.2	.46	.04	1492.
20	11.09	32.57	20	24.89	307.5	.62	.06	1492.
25	10.82	32.60	25	24.96	300.6	.77	.10	1491.
30	9.89	32.53	30	25.07	290.6	.91	.14	1487.
35	8.40	32.66	35	25.40	259.2	1.05	.16	1482.
40	7.51	32.52	40	25.42	257.1	1.18	.23	1478.
45	6.11	32.76	45	25.81	220.3	1.29	.26	1475.
50	5.62	32.79	50	25.88	213.7	1.40	.33	1471.
55	5.41	32.79	55	25.90	211.6	1.51	.39	1471.
60	5.18	32.78	60	25.92	209.7	1.61	.45	1470.
65	4.99	32.82	65	25.97	204.6	1.72	.52	1469.
70	4.92	32.81	70	25.97	204.6	1.82	.59	1469.
75	4.84	32.82	75	25.99	203.2	1.92	.66	1469.
80	4.77	32.86	80	26.03	199.1	2.02	.74	1469.
90	4.70	32.97	89	26.12	190.5	2.21	.91	1469.
100	4.67	33.13	99	26.25	178.5	2.40	1.09	1469.
110	4.61	33.36	109	26.45	160.1	2.57	1.27	1469.
120	4.67	33.53	119	26.57	148.7	2.72	1.45	1470.
130	4.70	33.70	129	26.70	136.3	2.86	1.66	1470.
140	4.70	33.77	139	26.76	130.9	2.99	1.81	1470.
150	4.62	33.80	149	26.79	128.0	3.12	2.00	1470.
160	4.51	33.82	159	26.82	125.5	3.25	2.20	1470.
170	4.41	33.84	169	26.85	122.6	3.37	2.41	1470.
180	4.30	33.82	179	26.84	123.1	3.50	2.60	1469.
190	4.23	33.84	189	26.87	121.0	3.62	2.80	1469.
200	4.19	33.86	199	26.88	119.6	3.74	3.10	1469.
210	4.14	33.86	206	26.89	119.0	3.86	3.35	1469.
220	4.11	33.86	218	26.89	118.7	3.98	3.61	1469.
230	4.09	33.87	228	26.90	117.7	4.09	3.88	1469.
240	4.06	33.90	236	26.93	115.7	4.21	4.16	1470.
250	4.00	33.92	248	26.95	113.6	4.33	4.44	1469.
260	3.97	33.91	258	26.95	113.7	4.44	4.74	1470.
270	3.94	33.93	268	26.97	112.0	4.55	5.05	1470.
280	3.94	33.95	278	26.98	111.2	4.67	5.36	1470.
290	3.91	33.94	288	26.97	111.6	4.78	5.69	1470.
300	3.83	33.95	296	26.99	110.0	4.89	6.02	1470.





## OFFSHORE OCEANOGRAPHY GROUP

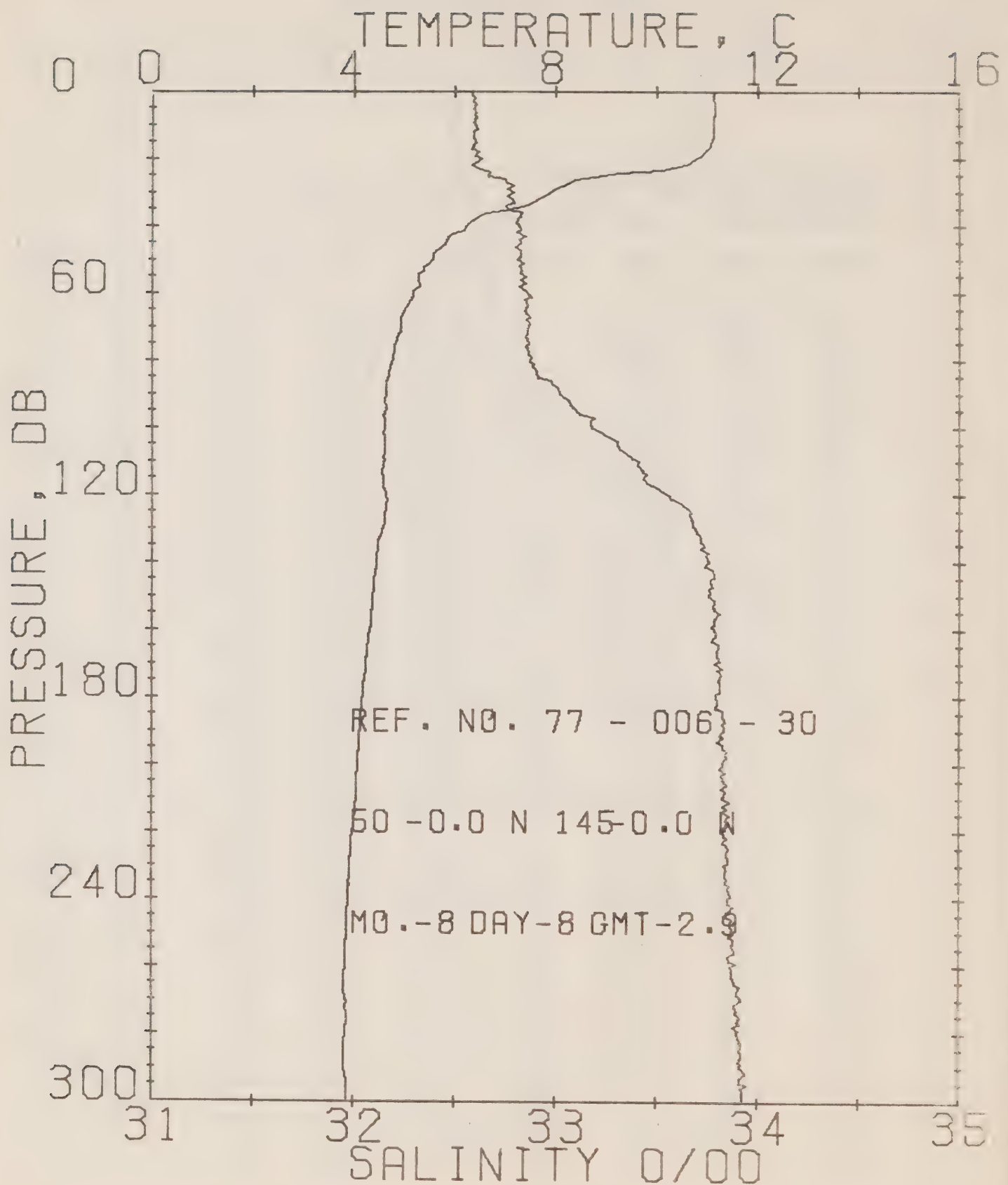
REFERENCE NO. 77- 6- 28

DATE 6/ 8/77

POSITION 50- .0N, 145- .0W

GMT 2.9

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	11.42	32.64	0	24.88	307.8	.00	.00	1492.
5	11.43	32.63	5	24.88	308.3	.15	.00	1493.
10	11.40	32.64	10	24.89	307.4	.31	.02	1493.
15	11.17	32.64	15	24.93	303.3	.46	.04	1492.
20	11.09	32.64	20	24.95	302.2	.61	.06	1492.
25	10.96	32.68	25	25.00	296.8	.76	.10	1491.
30	10.58	32.70	30	25.09	289.2	.91	.14	1490.
35	9.71	32.70	35	25.23	275.8	1.05	.18	1487.
40	9.01	32.75	40	25.38	261.1	1.19	.24	1484.
45	8.59	32.75	45	25.43	256.5	1.31	.29	1483.
50	7.50	32.77	50	25.65	236.0	1.44	.35	1478.
55	6.67	32.76	55	25.73	228.1	1.55	.41	1476.
60	5.92	32.79	60	25.84	217.3	1.66	.48	1473.
65	5.69	32.83	65	25.90	211.9	1.77	.55	1472.
70	5.45	32.83	70	25.93	209.0	1.88	.62	1471.
75	5.30	32.83	75	25.95	207.3	1.98	.70	1471.
80	5.13	32.84	80	25.97	205.0	2.08	.78	1470.
90	4.86	32.88	89	26.03	199.3	2.29	.95	1469.
100	4.73	32.93	99	26.09	194.2	2.48	1.14	1469.
110	4.52	33.10	109	26.25	178.7	2.67	1.35	1468.
120	4.60	33.41	119	26.48	156.8	2.84	1.54	1469.
130	4.61	33.57	129	26.61	145.0	2.99	1.75	1470.
140	4.51	33.72	139	26.74	132.5	3.13	1.92	1470.
150	4.44	33.76	149	26.78	129.0	3.26	2.12	1469.
160	4.36	33.80	159	26.82	125.3	3.38	2.31	1469.
170	4.27	33.81	169	26.84	123.7	3.51	2.52	1469.
180	4.20	33.83	179	26.86	121.9	3.63	2.74	1469.
190	4.10	33.84	189	26.88	119.6	3.75	2.97	1469.
200	4.03	33.84	199	26.88	119.3	3.87	3.21	1469.
210	3.99	33.86	209	26.90	117.6	3.99	3.40	1469.
220	3.97	33.87	218	26.91	116.8	4.11	3.72	1469.
230	3.91	33.88	228	26.93	115.1	4.23	3.98	1469.
240	3.85	33.91	238	26.96	112.6	4.34	4.26	1469.
250	3.82	33.90	248	26.95	112.9	4.45	4.54	1469.
260	3.81	33.91	258	26.96	112.3	4.57	4.83	1469.
270	3.80	33.91	268	26.96	112.3	4.68	5.13	1469.
280	3.79	33.92	278	26.97	111.4	4.79	5.45	1469.
290	3.78	33.94	288	26.99	110.0	4.90	5.77	1469.
300	3.77	33.94	298	26.99	110.1	5.01	6.09	1469.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6- 30

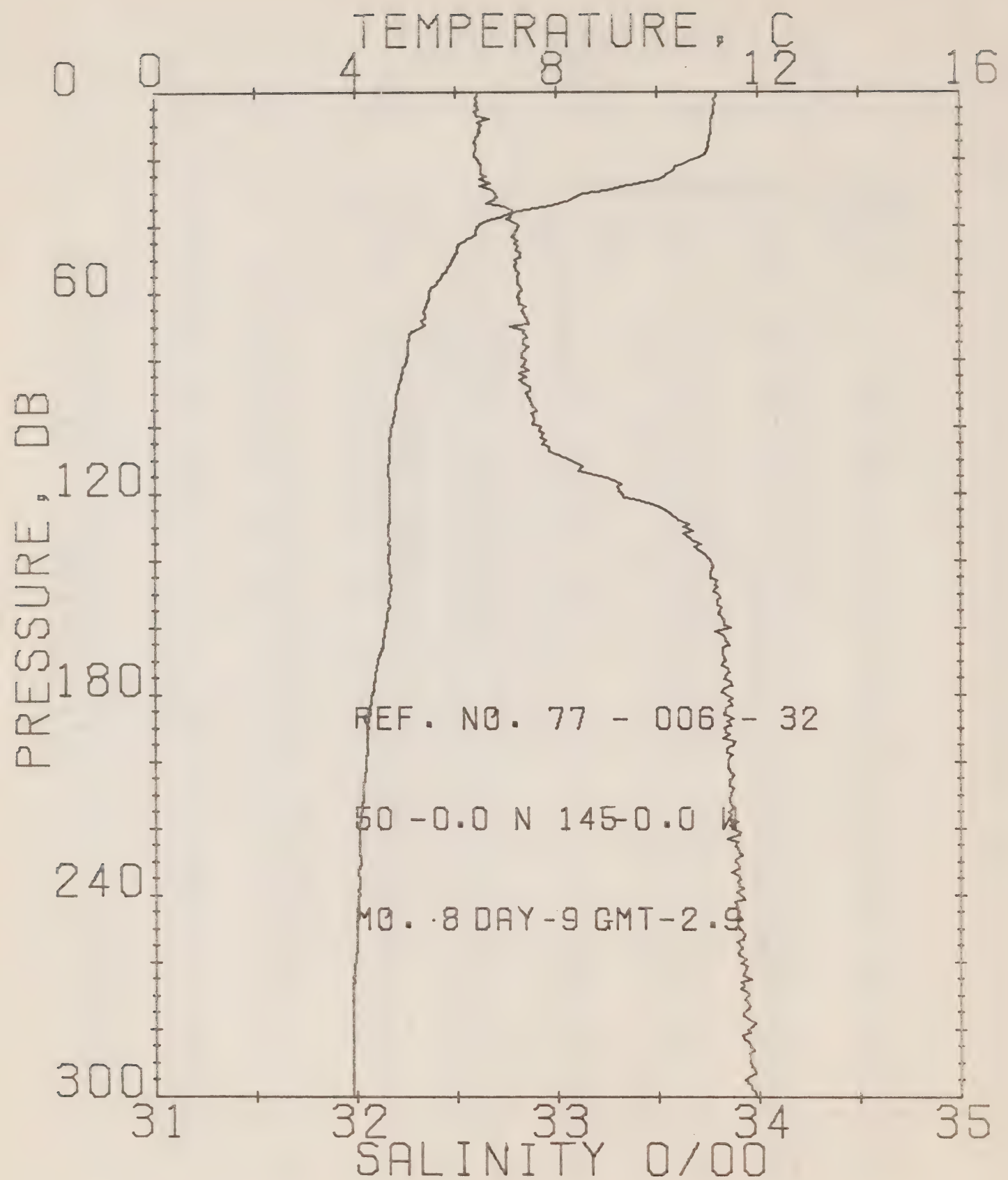
DATE 8/ 8/77

POSITION 30- .0N, 145- .0W

GMT 2.9

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA S	POT. EN	SOUND
0	11.13	32.59	0	24.90	306.3	.00	.00	1491.
5	11.14	32.59	5	24.90	306.0	.15	.00	1491.
10	11.12	32.60	10	24.91	305.4	.31	.02	1492.
15	11.07	32.61	15	24.92	304.3	.46	.04	1491.
20	10.74	32.63	20	25.00	296.9	.61	.05	1495.
25	8.75	32.67	25	25.36	263.2	.75	.09	1483.
30	7.66	32.79	30	25.58	241.9	.88	.13	1480.
35	7.06	32.76	35	25.66	232.6	1.00	.17	1477.
40	6.22	32.82	40	25.83	218.2	1.11	.21	1474.
45	5.82	32.82	45	25.88	213.2	1.21	.26	1472.
50	5.54	32.81	50	25.91	211.0	1.32	.31	1471.
55	5.28	32.85	55	25.96	205.5	1.42	.36	1470.
60	5.18	32.86	60	25.99	203.5	1.53	.43	1470.
65	4.99	32.85	65	26.00	202.4	1.63	.49	1469.
70	4.93	32.85	70	26.01	201.0	1.73	.56	1469.
75	4.81	32.87	75	26.03	199.2	1.83	.63	1469.
80	4.74	32.86	79	26.05	197.8	1.93	.71	1468.
90	4.65	33.02	89	26.17	186.4	2.12	.88	1468.
100	4.62	33.18	99	26.30	173.8	2.30	1.05	1469.
110	4.60	33.41	109	26.48	156.9	2.47	1.23	1469.
120	4.65	33.56	119	26.60	146.2	2.62	1.41	1470.
130	4.57	33.69	129	26.71	135.5	2.76	1.58	1470.
140	4.45	33.76	139	26.78	129.0	2.89	1.77	1469.
150	4.38	33.76	149	26.79	128.2	3.02	1.96	1469.
160	4.31	33.79	159	26.81	125.9	3.14	2.15	1469.
170	4.24	33.79	169	26.82	124.9	3.27	2.36	1469.
180	4.17	33.79	179	26.83	124.2	3.39	2.56	1469.
190	4.12	33.83	189	26.87	120.8	3.51	2.61	1469.
200	4.08	33.83	199	26.87	120.7	3.63	2.85	1469.
210	4.04	33.82	208	26.87	120.7	3.76	3.31	1469.
220	3.96	33.82	213	26.88	119.9	3.87	3.57	1469.
230	3.91	33.84	228	26.89	118.5	3.99	3.64	1469.
240	3.89	33.86	238	26.91	117.1	4.11	4.12	1469.
250	3.88	33.87	248	26.93	115.4	4.23	4.41	1469.
260	3.83	33.87	253	26.93	115.7	4.34	4.71	1469.
270	3.86	33.92	263	26.97	112.1	4.46	5.02	1469.
280	3.83	33.96	278	26.95	113.6	4.57	5.34	1469.
290	3.82	33.92	288	26.96	112.3	4.68	5.55	1469.
300	3.57	33.94	298	26.98	111.4	4.79	6.00	1470.





## OFFSHORE OCEANOGRAPHY GROUP

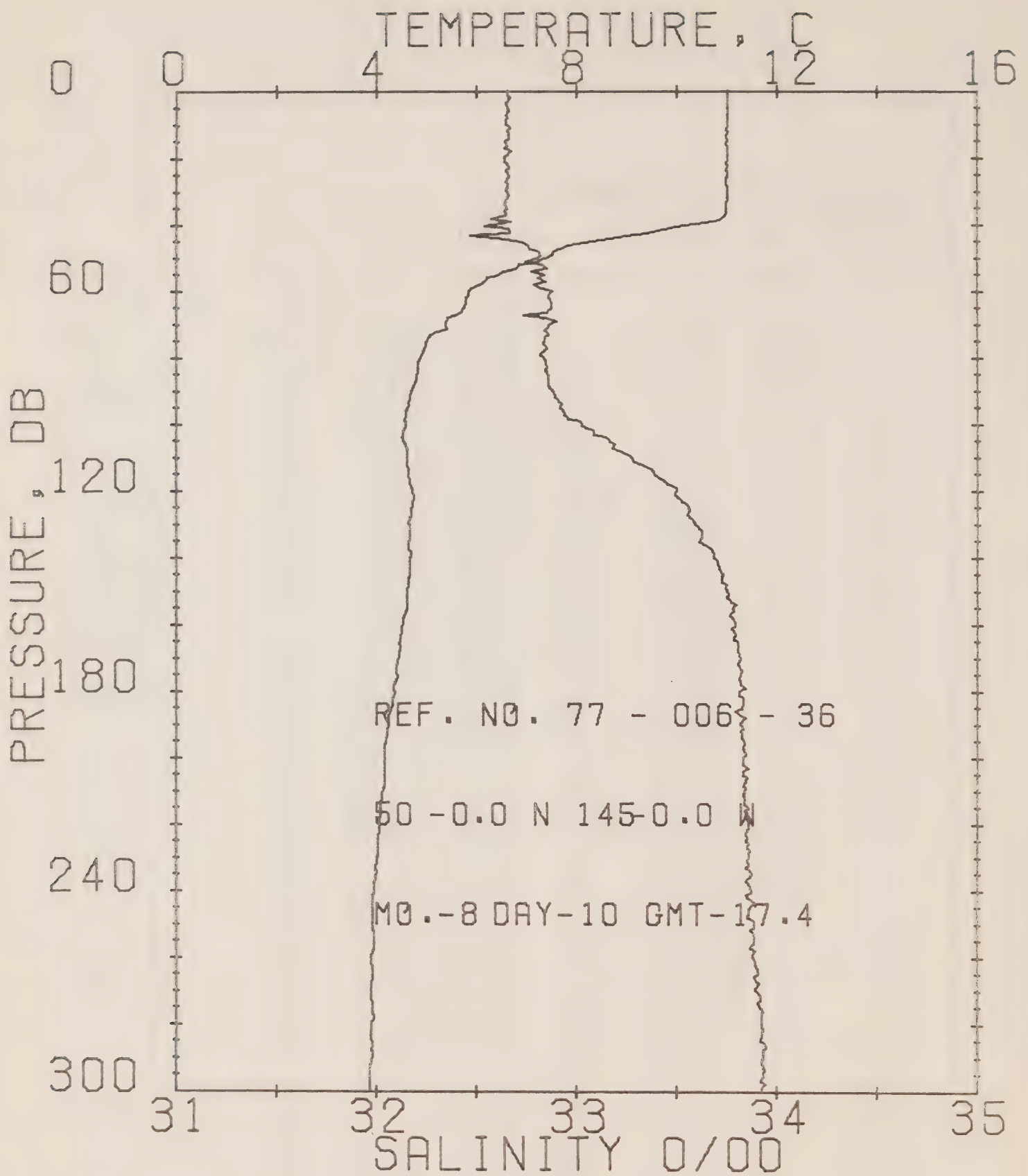
REFERENCE NO. 77- 6- 32

DATE 9/ 8/77

POSITION 50- 00N, 145- 00W

GMT 2.9

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	11.17	32.61	0	24.91	305.4	.00	.00	1492.
5	11.13	32.61	5	24.92	304.4	.15	.00	1491.
10	11.07	32.60	10	24.94	302.5	.30	.02	1491.
15	11.02	32.60	15	24.92	304.2	.46	.03	1491.
20	10.71	32.61	20	24.99	298.1	.61	.06	1490.
25	10.13	32.65	25	25.12	285.7	.75	.10	1486.
30	8.55	32.70	30	25.41	258.3	.89	.13	1483.
35	7.32	32.77	35	25.65	235.6	1.02	.16	1478.
40	6.42	32.81	40	25.80	221.3	1.13	.22	1475.
45	6.07	32.80	45	25.83	218.3	1.24	.27	1473.
50	5.91	32.79	50	25.85	216.8	1.35	.32	1473.
55	5.70	32.81	55	25.88	213.3	1.46	.36	1472.
60	5.46	32.82	60	25.92	209.9	1.56	.44	1471.
65	5.37	32.83	65	25.94	208.1	1.67	.51	1471.
70	5.31	32.77	70	25.90	211.7	1.77	.56	1470.
75	5.04	32.83	75	25.98	204.2	1.87	.65	1470.
80	5.01	32.84	80	25.99	203.3	1.98	.73	1469.
90	4.81	32.85	90	26.02	200.8	2.18	.91	1469.
100	4.71	32.92	99	26.08	194.8	2.38	1.10	1469.
110	4.66	33.07	109	26.20	183.2	2.57	1.30	1469.
120	4.66	33.32	119	26.40	164.5	2.70	1.51	1469.
130	4.64	33.63	129	26.65	141.0	2.80	1.70	1470.
140	4.64	33.76	139	26.76	131.3	3.03	1.88	1470.
150	4.67	33.80	149	26.78	128.8	3.16	2.08	1470.
160	4.57	33.86	159	26.84	123.2	3.28	2.26	1470.
170	4.42	33.84	169	26.84	123.5	3.41	2.49	1470.
180	4.30	33.83	179	26.85	122.4	3.53	2.71	1469.
190	4.23	33.84	189	26.86	121.6	3.65	2.94	1469.
200	4.19	33.85	199	26.87	120.3	3.77	3.16	1469.
210	4.12	33.86	208	26.89	118.8	3.89	3.40	1469.
220	4.06	33.87	218	26.90	117.8	4.01	3.60	1469.
230	4.07	33.88	228	26.91	117.0	4.13	3.95	1469.
240	4.04	33.91	238	26.94	114.7	4.24	4.20	1469.
250	3.99	33.90	248	26.93	114.9	4.36	4.52	1469.
260	3.96	33.91	258	26.95	113.8	4.47	4.81	1469.
270	3.93	33.94	268	26.98	111.1	4.58	5.12	1470.
280	3.93	33.95	278	26.98	110.7	4.69	5.45	1470.
290	3.93	33.96	288	26.99	110.3	4.81	5.75	1470.
300	3.93	33.94	298	26.97	111.9	4.92	6.08	1470.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6- 36

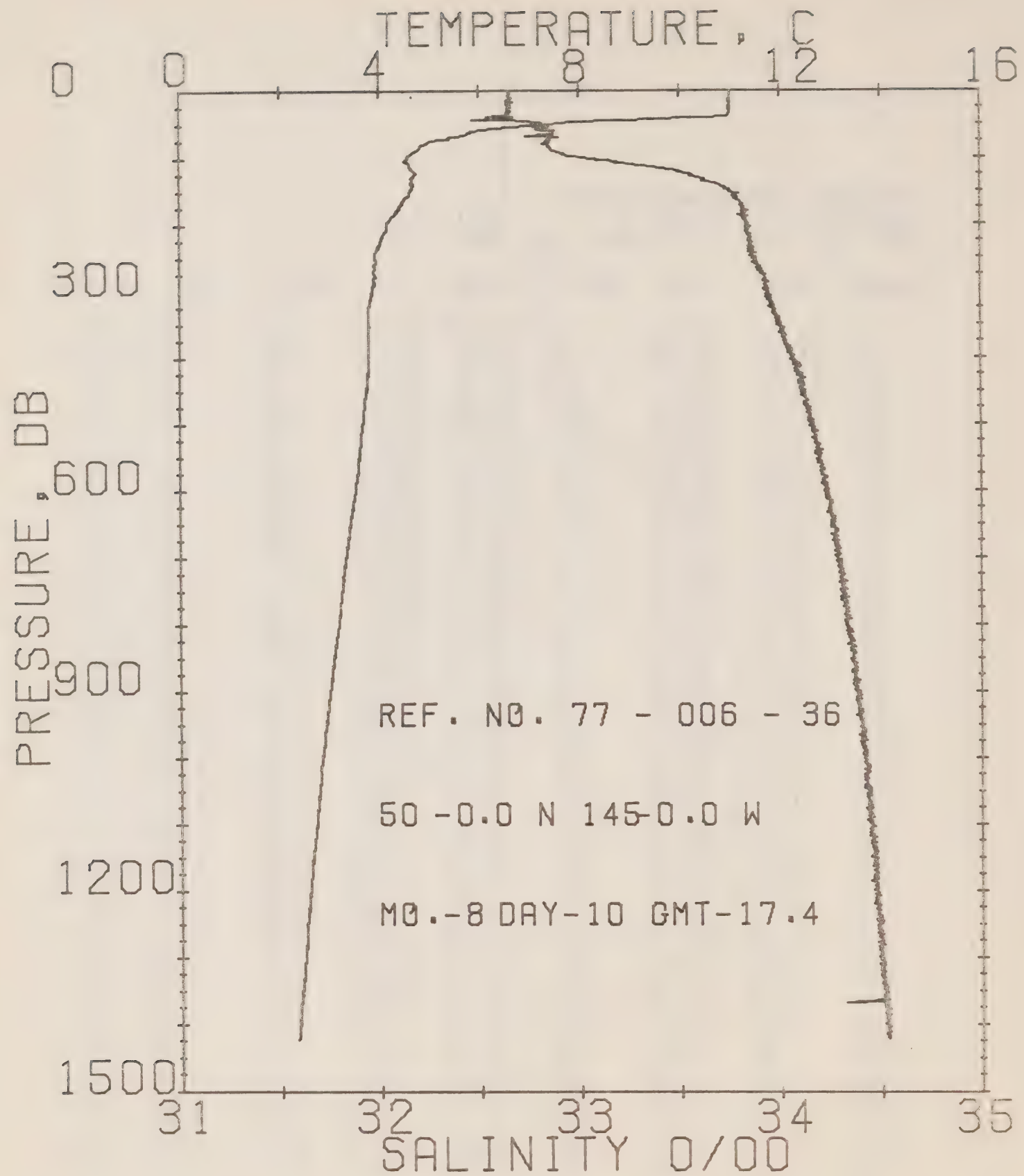
DATE 10/ 8/77

POSITION 50- .0N, 145- .0W

GMT 17.4

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	11.01	32.66	0	24.97	299.2	.00	.00	1491.
5	11.01	32.65	5	24.97	299.5	.15	.00	1491.
10	11.01	32.64	10	24.96	300.2	.30	.02	1491.
15	11.00	32.64	15	24.96	300.4	.45	.03	1491.
20	11.00	32.64	20	24.96	300.5	.60	.06	1491.
25	11.00	32.66	25	24.98	299.1	.75	.10	1491.
30	11.01	32.64	30	24.96	300.6	.90	.14	1491.
35	10.99	32.65	35	24.97	299.8	1.05	.19	1492.
40	10.08	32.56	40	25.06	291.6	1.20	.24	1488.
45	8.18	32.71	45	25.48	252.0	1.34	.30	1481.
50	7.36	32.81	50	25.67	233.7	1.46	.36	1478.
55	6.40	32.84	55	25.82	219.3	1.57	.42	1475.
60	5.85	32.88	60	25.92	210.0	1.68	.49	1473.
65	5.74	32.87	65	25.93	209.1	1.78	.55	1472.
70	5.39	32.87	70	25.97	205.3	1.89	.63	1471.
75	4.99	32.84	75	25.99	203.1	1.99	.70	1469.
80	4.86	32.84	80	26.00	202.2	2.09	.78	1469.
90	4.70	32.88	89	26.05	197.2	2.29	.95	1468.
100	4.59	33.03	99	26.18	185.2	2.48	1.14	1468.
110	4.62	33.27	109	26.37	167.5	2.66	1.33	1469.
120	4.73	33.50	119	26.54	151.2	2.82	1.51	1470.
130	4.67	33.60	129	26.62	143.6	2.97	1.70	1470.
140	4.67	33.68	139	26.69	137.1	3.11	1.90	1470.
150	4.62	33.75	149	26.75	131.7	3.24	2.09	1470.
160	4.51	33.79	159	26.80	127.5	3.37	2.30	1470.
170	4.44	33.82	169	26.82	125.0	3.50	2.51	1470.
180	4.36	33.82	179	26.83	124.2	3.62	2.73	1470.
190	4.24	33.82	189	26.85	122.7	3.74	2.97	1469.
200	4.16	33.84	199	26.87	120.9	3.87	3.21	1469.
210	4.12	33.84	209	26.88	120.1	3.99	3.46	1469.
220	4.06	33.86	218	26.89	118.5	4.11	3.72	1469.
230	4.01	33.86	228	26.90	118.0	4.22	3.99	1469.
240	3.94	33.87	238	26.92	116.4	4.34	4.27	1469.
250	3.93	33.89	248	26.93	115.0	4.46	4.56	1469.
260	3.90	33.88	258	26.93	115.8	4.57	4.86	1469.
270	3.90	33.89	268	26.94	114.6	4.69	5.17	1469.
280	3.90	33.93	278	26.96	112.3	4.80	5.49	1470.
290	3.90	33.93	288	26.97	112.0	4.91	5.81	1470.
300	3.86	33.93	298	26.98	111.3	5.02	6.15	1470.





## OFFSHORE OCEANOGRAPHY GROUP

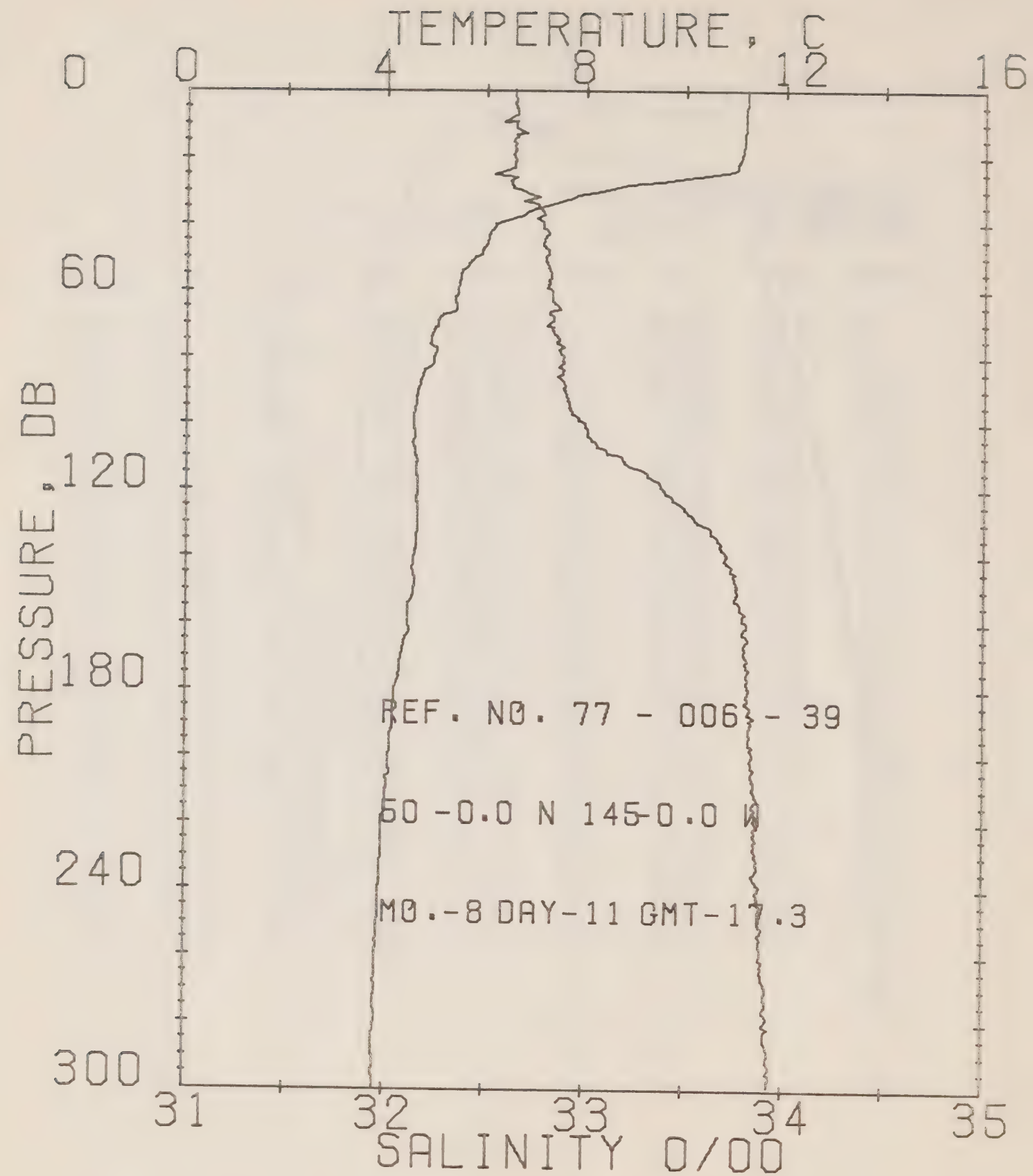
REFERENCE NO. 77- 6- 36

DATE 10/ 8/77

POSITION 50- .0N, 145- .0W

GMT 17.4

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	11.01	32.66	0	24.97	299.2	.00	.00	1491.
50	7.36	32.81	50	25.67	233.7	1.46	.36	1478.
100	4.59	33.03	99	26.18	185.2	2.48	1.14	1468.
150	4.62	33.75	149	26.75	131.7	3.24	2.09	1470.
200	4.16	33.84	199	26.87	120.9	3.87	3.21	1469.
250	3.93	33.89	248	26.93	115.0	4.46	4.56	1469.
300	3.86	33.93	298	26.98	111.3	5.02	6.15	1470.
350	3.80	34.01	347	27.04	105.8	5.57	7.95	1470.
400	3.78	34.06	397	27.08	102.1	6.09	9.93	1471.
450	3.74	34.12	446	27.14	97.1	6.58	12.09	1472.
500	3.66	34.16	496	27.17	94.2	7.06	14.41	1472.
550	3.59	34.20	545	27.21	90.7	7.53	16.88	1473.
600	3.51	34.22	595	27.24	88.5	7.97	19.50	1474.
650	3.40	34.26	644	27.28	85.2	8.41	22.25	1474.
700	3.31	34.29	694	27.31	82.2	8.82	25.12	1474.
750	3.23	34.30	743	27.33	80.8	9.23	28.11	1475.
800	3.16	34.34	793	27.36	77.9	9.62	31.22	1476.
850	3.07	34.36	842	27.39	75.2	10.00	34.43	1476.
900	3.00	34.38	891	27.41	73.6	10.37	37.75	1476.
950	2.91	34.41	941	27.44	70.9	10.74	41.15	1477.
1000	2.83	34.41	990	27.46	69.6	11.09	44.64	1477.
1050	2.77	34.44	1040	27.48	67.6	11.43	48.23	1478.
1100	2.71	34.45	1089	27.49	66.4	11.77	51.91	1479.
1150	2.64	34.47	1138	27.51	64.6	12.09	55.67	1479.
1200	2.58	34.47	1188	27.52	64.0	12.41	59.50	1480.
1250	2.52	34.50	1237	27.55	61.5	12.73	63.43	1480.
1300	2.48	34.49	1286	27.54	62.3	13.04	67.44	1481.
1350	2.41	34.52	1336	27.58	59.2	13.34	71.53	1482.
1400	2.35	34.53	1385	27.59	58.1	13.64	75.68	1482.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6- 39

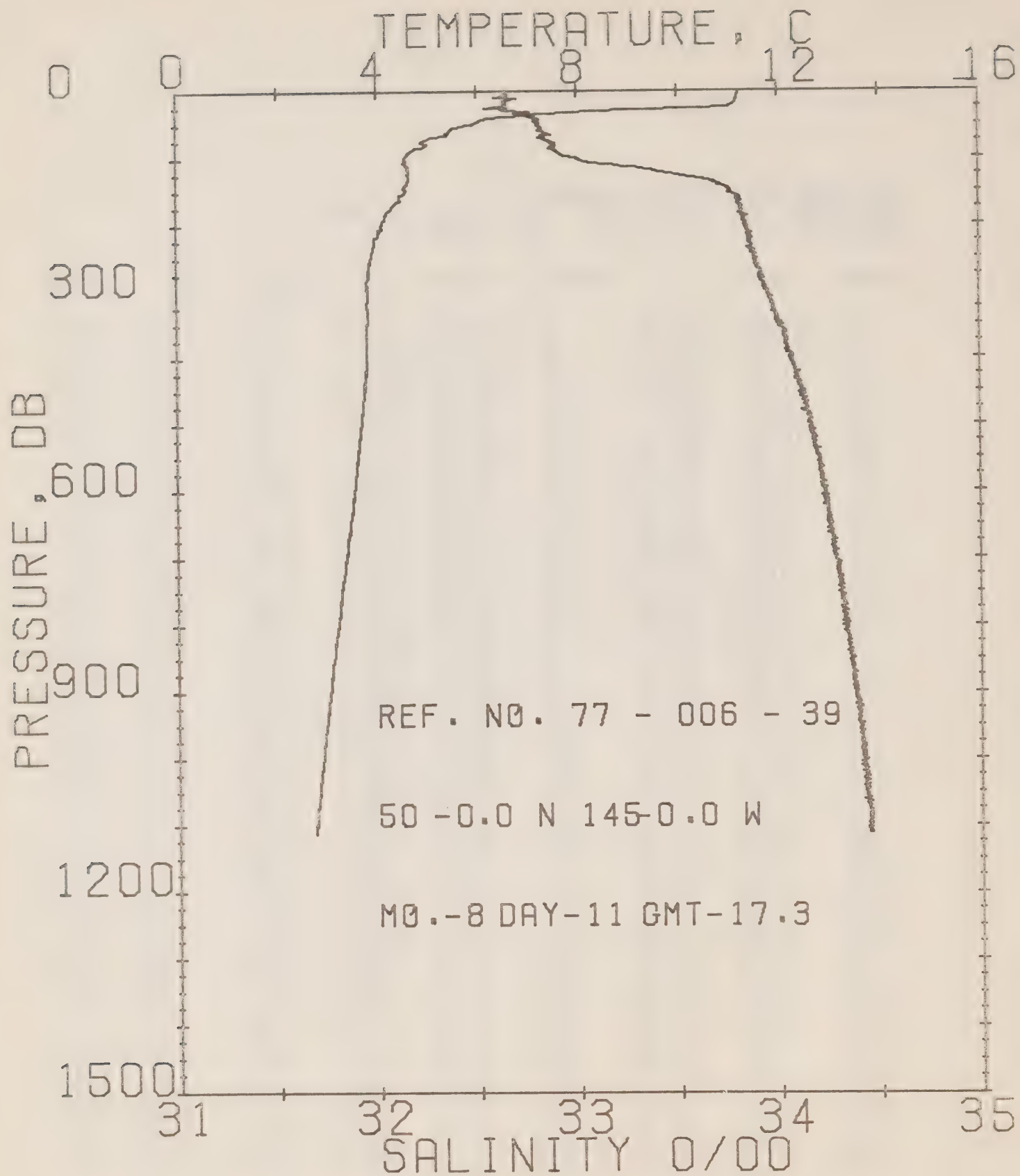
DATE 11/ 8/77

POSITION 50- .0N, 145- .0W

GMT 17.3

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	11.22	32.64	0	24.92	304.1	.00	.00	1492.
5	11.21	32.64	5	24.93	303.7	.15	.00	1492.
10	11.19	32.65	10	24.94	302.9	.30	.02	1492.
15	11.17	32.64	15	24.93	303.6	.46	.03	1492.
20	11.11	32.64	20	24.94	302.7	.61	.06	1492.
25	10.47	32.55	25	24.98	298.8	.76	.10	1489.
30	8.30	32.68	30	25.43	256.1	.89	.13	1482.
35	7.01	32.77	35	25.68	232.0	1.02	.17	1477.
40	6.21	32.79	40	25.80	220.8	1.13	.22	1474.
45	6.03	32.79	45	25.83	218.1	1.24	.27	1473.
50	5.77	32.80	50	25.87	214.6	1.35	.32	1472.
55	5.50	32.83	55	25.92	209.5	1.45	.37	1471.
60	5.45	32.83	60	25.93	208.7	1.56	.44	1471.
65	5.40	32.86	65	25.96	205.9	1.66	.50	1471.
70	5.03	32.82	70	25.97	205.1	1.76	.57	1469.
75	4.92	32.87	75	26.02	200.5	1.87	.65	1469.
80	4.97	32.89	80	26.03	199.2	1.97	.73	1469.
90	4.64	32.89	89	26.07	195.7	2.16	.90	1468.
100	4.56	33.00	99	26.16	187.3	2.36	1.08	1468.
110	4.62	33.18	109	26.30	174.3	2.54	1.28	1469.
120	4.64	33.39	119	26.47	158.4	2.71	1.48	1469.
130	4.65	33.57	129	26.60	145.7	2.86	1.67	1470.
140	4.57	33.71	139	26.73	133.9	3.00	1.86	1470.
150	4.56	33.76	149	26.77	130.1	3.13	2.05	1470.
160	4.45	33.81	159	26.82	125.6	3.26	2.26	1470.
170	4.32	33.81	169	26.83	124.4	3.38	2.47	1469.
180	4.19	33.82	179	26.86	121.9	3.50	2.69	1469.
190	4.15	33.84	189	26.87	120.6	3.63	2.92	1469.
200	4.09	33.85	199	26.88	119.5	3.75	3.16	1469.
210	4.03	33.85	208	26.89	118.8	3.87	3.41	1469.
220	3.95	33.86	218	26.91	117.2	3.98	3.66	1469.
230	3.94	33.86	228	26.91	117.4	4.10	3.93	1469.
240	3.90	33.88	238	26.93	115.3	4.22	4.21	1469.
250	3.87	33.88	248	26.93	115.3	4.33	4.50	1469.
260	3.84	33.89	258	26.94	113.9	4.45	4.80	1469.
270	3.84	33.92	268	26.97	112.1	4.56	5.10	1469.
280	3.82	33.92	278	26.97	112.1	4.67	5.42	1469.
290	3.81	33.93	288	26.98	110.7	4.78	5.74	1469.
300	3.81	33.95	298	26.99	109.7	4.89	6.07	1470.





## OFFSHORE OCEANOGRAPHY GROUP

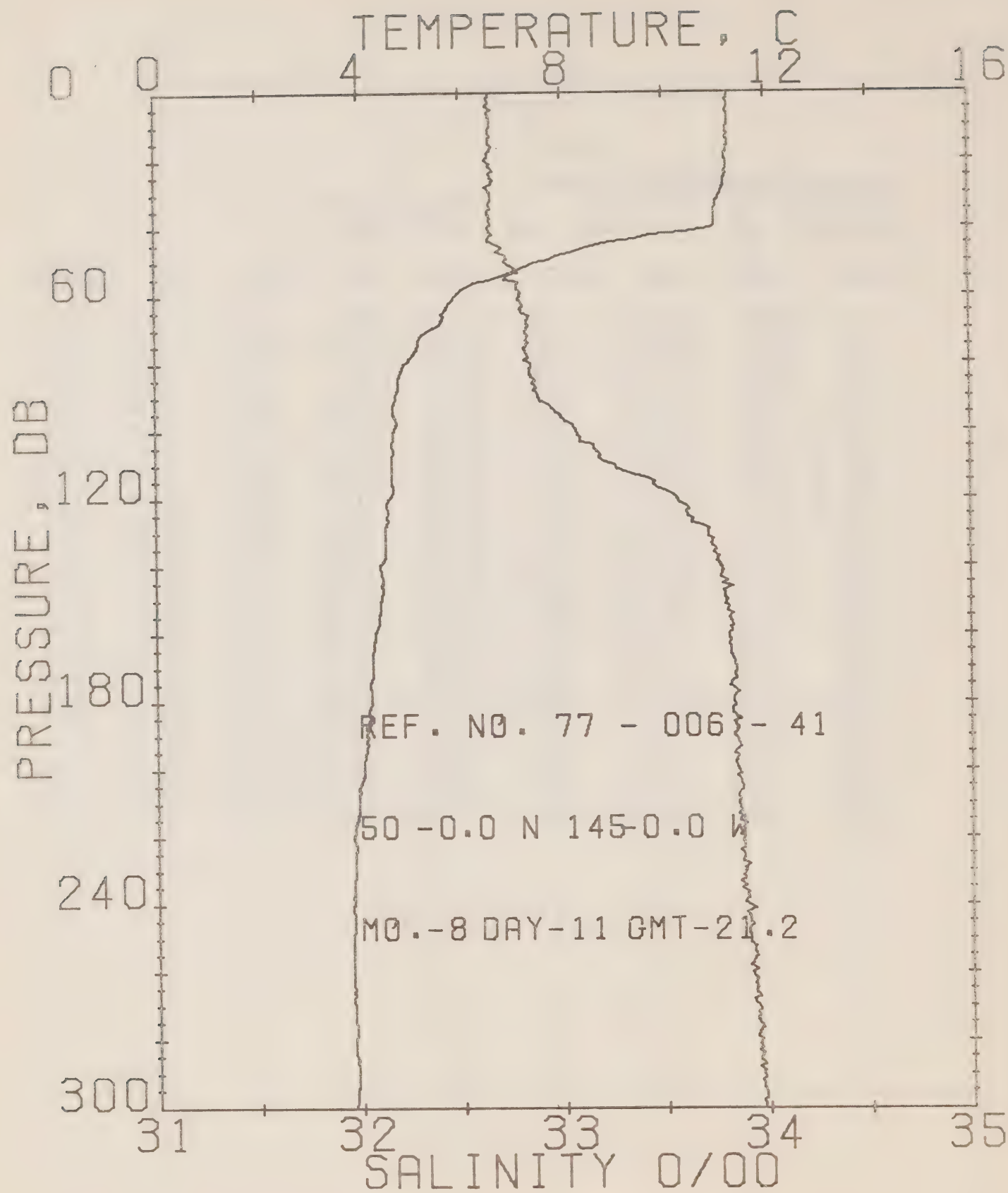
REFERENCE NO. 77- 6- 39

DATE 11/ 8/77

POSITION 50- .0N, 145- .0W

GMT 17.3

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	11.22	32.64	0	24.92	304.1	.00	.00	1492.
50	5.77	32.80	50	25.87	214.6	1.35	.32	1472.
100	4.56	33.00	99	26.16	187.3	2.36	1.08	1468.
150	4.56	33.76	149	26.77	130.1	3.13	2.05	1470.
200	4.09	33.85	199	26.88	119.5	3.75	3.16	1469.
250	3.87	33.88	248	26.93	115.3	4.33	4.50	1469.
300	3.81	33.95	298	26.99	109.7	4.89	6.07	1470.
350	3.79	34.01	347	27.05	105.2	5.43	7.86	1470.
400	3.78	34.07	397	27.09	101.0	5.95	9.84	1471.
450	3.74	34.13	446	27.14	97.0	6.45	12.00	1472.
500	3.67	34.15	496	27.16	95.0	6.93	14.32	1472.
550	3.59	34.20	545	27.21	91.0	7.39	16.80	1473.
600	3.52	34.23	595	27.24	88.0	7.84	19.43	1474.
650	3.44	34.26	644	27.28	85.1	8.28	22.21	1474.
700	3.36	34.28	694	27.30	83.3	8.70	25.11	1475.
750	3.27	34.31	743	27.33	80.6	9.11	28.13	1475.
800	3.19	34.34	793	27.36	78.2	9.51	31.27	1476.
850	3.09	34.37	842	27.39	75.0	9.89	34.51	1476.
900	3.02	34.39	891	27.42	73.2	10.27	37.85	1477.
950	2.94	34.40	941	27.44	71.5	10.63	41.28	1477.
1000	2.87	34.42	990	27.46	69.6	10.99	44.80	1478.
1050	2.79	34.43	1040	27.47	68.5	11.33	48.41	1478.
1100	2.72	34.45	1089	27.50	66.2	11.67	52.11	1479.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8- 41

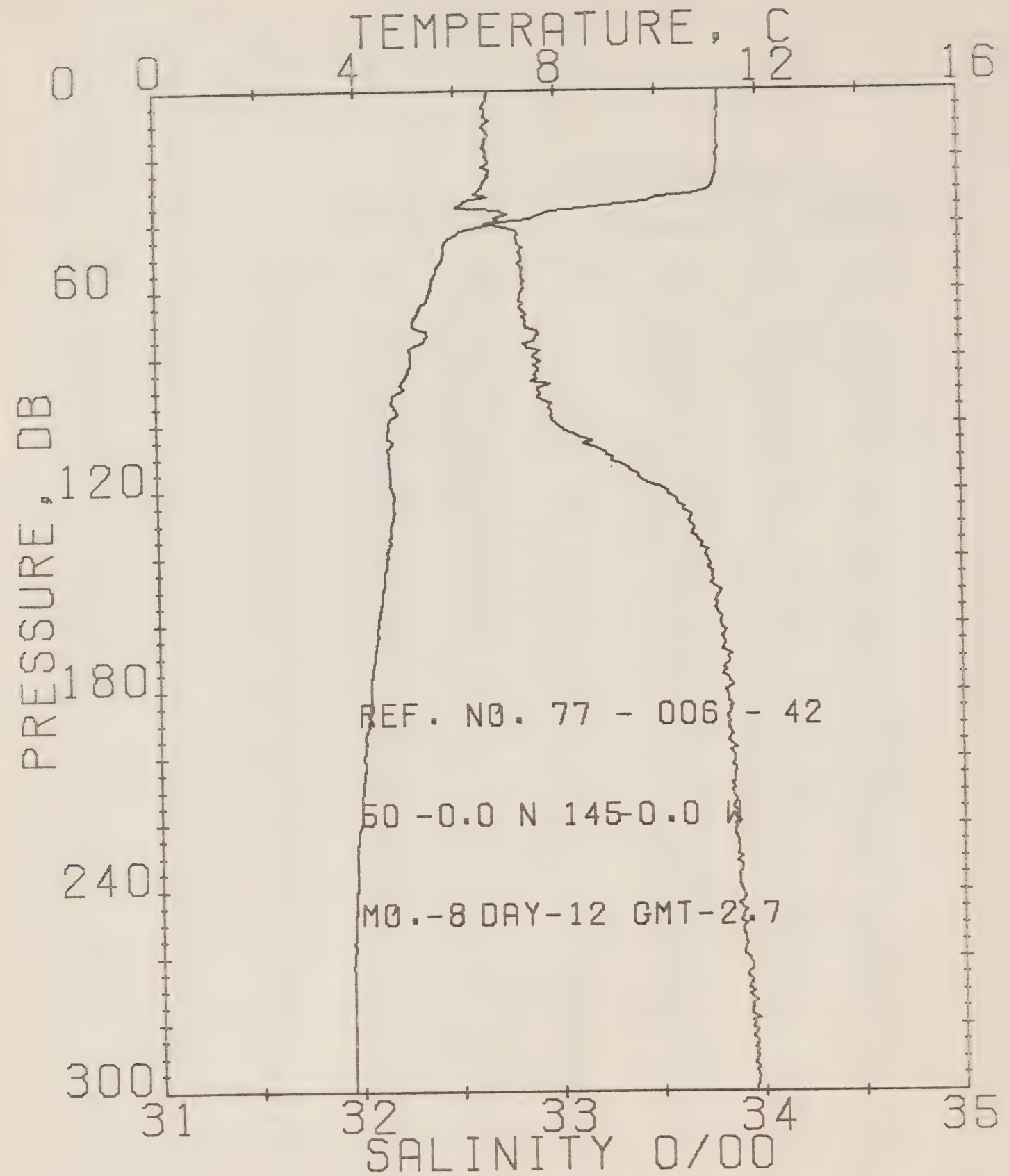
DATE 11/ 8/77

POSITION 50- 00N, 145- 00W

GMT 21.2

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	11.27	32.84	0	24.92	304.6	.00	.00	1492.
5	11.26	32.86	5	24.93	303.6	.15	.00	1492.
10	11.26	32.86	10	24.93	303.8	.30	.02	1492.
15	11.27	32.85	15	24.92	304.3	.46	.03	1492.
20	11.26	32.83	20	24.91	305.8	.61	.06	1492.
25	11.20	32.85	25	24.93	303.5	.76	.10	1492.
30	11.13	32.85	30	24.95	302.2	.91	.14	1492.
35	11.02	32.84	35	24.96	301.1	1.06	.19	1492.
40	10.94	32.84	40	24.97	299.9	1.21	.25	1491.
45	8.85	32.88	45	25.36	261.1	1.35	.31	1483.
50	7.50	32.72	50	25.56	241.9	1.48	.37	1479.
55	6.60	32.72	55	25.70	230.4	1.60	.43	1475.
60	5.90	32.79	60	25.85	216.9	1.71	.50	1473.
65	5.62	32.81	65	25.89	212.4	1.81	.56	1472.
70	5.35	32.82	70	25.93	208.5	1.92	.64	1471.
75	5.14	32.82	75	25.96	206.5	2.02	.71	1470.
80	4.87	32.84	80	26.01	201.7	2.12	.79	1469.
90	4.72	32.88	89	26.05	197.6	2.32	.97	1468.
100	4.68	33.00	99	26.20	183.3	2.51	1.13	1469.
110	4.63	33.25	109	26.35	168.9	2.69	1.34	1469.
120	4.56	33.56	119	26.61	145.1	2.85	1.52	1469.
130	4.51	33.71	129	26.73	133.2	2.99	1.70	1469.
140	4.40	33.77	139	26.79	127.6	3.12	1.86	1469.
150	4.41	33.81	149	26.82	125.3	3.24	2.07	1469.
160	4.30	33.81	159	26.83	123.9	3.37	2.26	1469.
170	4.24	33.85	169	26.87	120.5	3.49	2.47	1469.
180	4.21	33.84	179	26.86	121.2	3.61	2.69	1469.
190	4.12	33.84	189	26.87	120.5	3.73	2.91	1469.
200	4.05	33.85	199	26.89	118.5	3.85	3.13	1469.
210	3.95	33.85	209	26.96	117.8	3.97	3.40	1469.
220	3.85	33.88	218	26.93	114.6	4.09	3.65	1468.
230	3.86	33.89	228	26.94	114.3	4.20	3.91	1469.
240	3.82	33.90	238	26.95	113.2	4.31	4.19	1469.
250	3.82	33.91	248	26.96	112.6	4.43	4.47	1469.
260	3.82	33.91	258	26.96	112.1	4.54	4.76	1469.
270	3.83	33.94	268	26.99	110.1	4.65	5.06	1469.
280	3.84	33.96	278	27.00	109.2	4.76	5.37	1469.
290	3.89	33.97	288	27.00	109.2	4.87	5.68	1470.
300	3.83	33.97	298	27.01	108.6	4.98	6.01	1470.





## OFFSHORE OCEANOGRAPHY GROUP

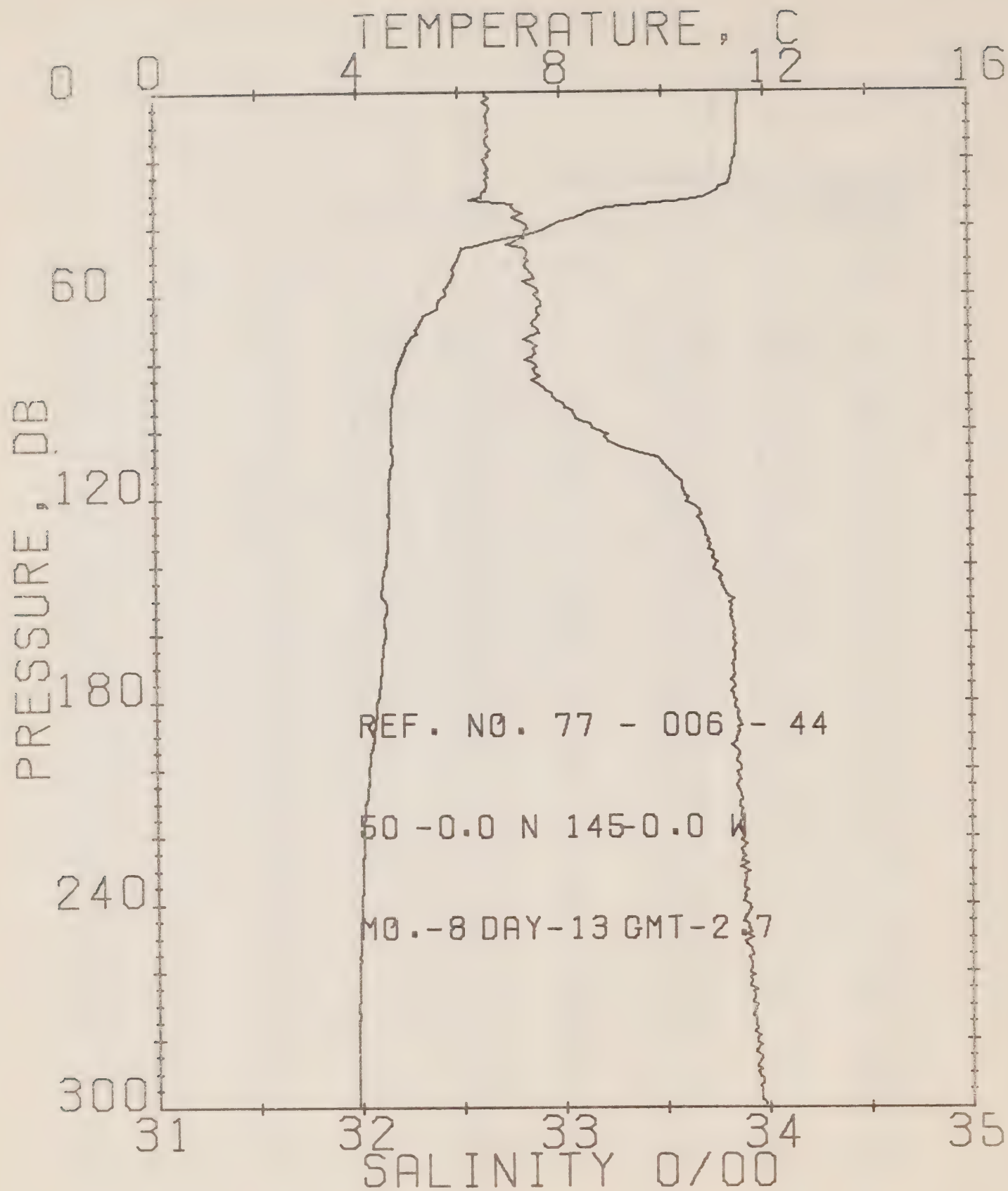
REFERENCE NO. 77- 6- 42

DATE 12/ 8/77

POSITION 50- .0N, 145- .0W

GMT 2.7

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	11.25	32.66	0	24.94	302.6	.00	.00	1492.
5	11.24	32.64	5	24.92	304.4	.15	.00	1492.
10	11.24	32.65	10	24.93	303.7	.30	.02	1492.
15	11.24	32.65	15	24.95	303.9	.45	.03	1492.
20	11.22	32.66	20	24.94	303.1	.61	.06	1492.
25	11.20	32.66	25	24.94	302.7	.76	.10	1492.
30	11.03	32.62	30	24.94	302.7	.91	.14	1492.
35	8.57	32.51	35	25.26	272.9	1.05	.19	1482.
40	6.73	32.65	40	25.63	237.7	1.18	.25	1476.
45	5.80	32.60	45	25.87	214.7	1.29	.26	1472.
50	5.74	32.82	50	25.89	212.4	1.30	.35	1472.
55	5.58	32.83	55	25.91	210.5	1.50	.39	1471.
60	5.47	32.83	60	25.93	209.3	1.60	.45	1471.
65	5.26	32.82	65	25.94	207.9	1.71	.52	1470.
70	5.13	32.84	70	25.96	204.5	1.81	.59	1470.
75	5.34	32.89	75	25.99	203.6	1.91	.66	1471.
80	5.06	32.88	80	26.02	200.9	2.01	.74	1470.
90	4.86	32.91	89	26.06	197.1	2.21	.92	1469.
100	4.61	32.99	99	26.15	188.1	2.40	1.10	1468.
110	4.60	33.27	109	26.38	166.9	2.58	1.29	1469.
120	4.69	33.54	119	26.57	148.3	2.74	1.48	1470.
130	4.65	33.66	129	26.67	139.0	2.88	1.66	1470.
140	4.56	33.74	139	26.74	132.2	3.02	1.85	1470.
150	4.45	33.80	149	26.81	126.1	3.15	2.04	1470.
160	4.36	33.80	159	26.82	125.4	3.28	2.24	1469.
170	4.28	33.85	169	26.85	122.1	3.40	2.45	1469.
180	4.21	33.82	179	26.85	122.3	3.52	2.65	1469.
190	4.15	33.84	189	26.87	120.7	3.64	2.89	1469.
200	4.06	33.86	199	26.89	118.3	3.76	3.10	1469.
210	4.02	33.85	208	26.89	118.7	3.88	3.36	1469.
220	3.96	33.86	218	26.91	117.3	4.00	3.65	1469.
230	3.90	33.89	228	26.94	114.2	4.11	3.90	1469.
240	3.88	33.89	238	26.94	114.4	4.23	4.17	1469.
250	3.85	33.91	248	26.96	112.3	4.34	4.40	1469.
260	3.80	33.92	258	26.97	111.6	4.46	4.75	1469.
270	3.81	33.94	268	26.98	110.4	4.57	5.05	1469.
280	3.81	33.94	278	26.99	110.1	4.68	5.30	1469.
290	3.81	33.96	288	27.00	108.8	4.79	5.60	1469.
300	3.81	33.95	298	26.99	109.9	4.89	6.01	1470.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 17- 6- 44

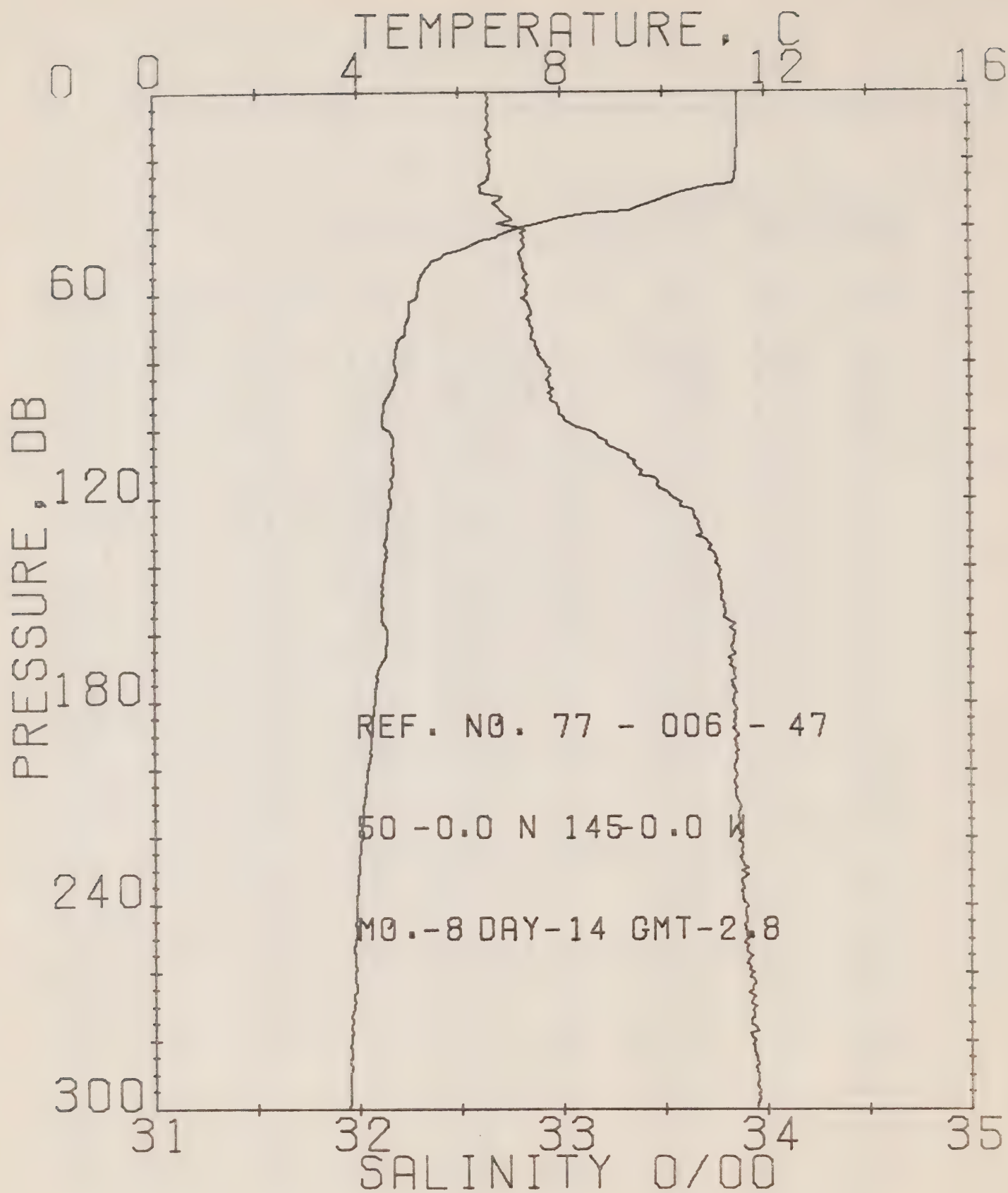
DATE 13/ 8/77

POSITION 50- .0N, 145- .0W

GMT 2.7

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	11.49	32.63	0	24.87	309.2	.00	.00	1493.
5	11.48	32.66	5	24.89	307.4	.15	.00	1493.
10	11.47	32.65	10	24.88	308.0	.31	.02	1493.
15	11.47	32.64	15	24.87	309.0	.45	.04	1493.
20	11.40	32.62	20	24.88	308.9	.62	.06	1493.
25	11.34	32.64	25	24.90	306.4	.77	.10	1493.
30	10.96	32.61	30	24.95	302.0	.92	.14	1491.
35	8.60	32.78	35	25.46	253.0	1.06	.19	1483.
40	7.71	32.84	40	25.64	236.2	1.19	.25	1480.
45	6.46	32.74	45	25.74	226.6	1.30	.28	1474.
50	5.94	32.64	50	25.88	213.9	1.41	.34	1473.
55	5.65	32.66	55	25.91	210.8	1.52	.39	1473.
60	5.72	32.87	60	25.93	208.7	1.62	.45	1472.
65	5.56	32.68	65	25.98	204.0	1.72	.52	1471.
70	5.13	32.88	70	26.00	201.9	1.83	.59	1470.
75	4.94	32.68	75	26.03	199.9	1.93	.67	1469.
80	4.79	32.86	80	26.03	199.7	2.03	.74	1469.
90	4.67	32.95	89	26.11	191.5	2.22	.91	1468.
100	4.64	33.17	99	26.29	174.9	2.41	1.09	1469.
110	4.65	33.49	109	26.54	151.0	2.57	1.27	1469.
120	4.58	33.62	119	26.65	141.2	2.72	1.44	1469.
130	4.57	33.70	129	26.72	134.6	2.85	1.61	1470.
140	4.56	33.75	139	26.76	130.7	2.99	1.86	1470.
150	4.51	33.84	149	26.83	123.9	3.11	1.96	1470.
160	4.50	33.84	159	26.83	124.1	3.24	2.13	1470.
170	4.42	33.64	169	26.84	123.4	3.36	2.39	1470.
180	4.33	33.64	179	26.86	122.1	3.49	2.61	1470.
190	4.27	33.85	189	26.87	120.9	3.61	2.84	1470.
200	4.17	33.66	199	26.89	118.9	3.73	3.06	1469.
210	4.09	33.66	208	26.89	118.5	3.85	3.32	1469.
220	4.06	33.68	218	26.91	116.7	3.96	3.56	1469.
230	4.03	33.69	228	26.93	115.5	4.09	3.85	1469.
240	4.00	33.69	238	26.93	115.3	4.20	4.13	1469.
250	3.97	33.92	248	26.95	113.4	4.31	4.42	1469.
260	3.95	33.91	258	26.95	113.7	4.43	4.71	1469.
270	3.95	33.94	268	26.97	111.7	4.54	5.02	1470.
280	3.93	33.94	278	26.98	111.3	4.65	5.35	1470.
290	3.92	33.94	288	26.97	111.6	4.76	5.65	1470.
300	3.91	33.97	298	27.00	109.1	4.87	5.96	1470.





## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 17- 6- 47

DATE 14/ 8/77

POSITION 50- 00N, 145- 00W GMT 2.8

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	11.48	32.64	0	24.86	308.5	.00	.00	1493.
5	11.47	32.64	5	24.88	308.5	.15	.00	1493.
10	11.47	32.64	10	24.88	308.0	.31	.02	1493.
15	11.46	32.64	15	24.88	308.5	.46	.04	1493.
20	11.44	32.65	20	24.89	307.5	.62	.06	1493.
25	11.42	32.64	25	24.89	307.8	.77	.10	1493.
30	10.52	32.61	30	25.06	291.8	.92	.14	1489.
35	9.58	32.70	35	25.26	270.3	1.06	.19	1480.
40	7.25	32.77	40	25.60	234.9	1.18	.23	1470.
45	6.29	32.82	45	25.82	219.5	1.30	.26	1474.
50	5.48	32.81	50	25.91	210.9	1.41	.34	1471.
55	5.24	32.81	55	25.94	207.6	1.51	.39	1470.
60	5.17	32.83	60	25.96	205.7	1.61	.45	1470.
65	5.02	32.85	65	26.00	202.5	1.72	.52	1469.
70	4.92	32.86	70	26.01	201.1	1.82	.59	1469.
75	4.77	32.87	75	26.04	198.5	1.92	.66	1468.
80	4.72	32.92	80	26.08	194.5	2.01	.74	1468.
90	4.58	32.95	89	26.12	190.4	2.21	.90	1468.
100	4.60	33.12	99	26.20	178.2	2.30	1.06	1468.
110	4.69	33.35	109	26.43	161.6	2.56	1.27	1469.
120	4.62	33.55	119	26.59	146.4	2.72	1.45	1469.
130	4.55	33.69	129	26.71	135.7	2.86	1.62	1470.
140	4.50	33.77	139	26.78	129.1	2.99	1.81	1470.
150	4.46	33.78	149	26.79	127.7	3.12	2.00	1470.
160	4.36	33.85	159	26.83	124.0	3.24	2.19	1470.
170	4.39	33.84	169	26.85	122.9	3.37	2.40	1470.
180	4.31	33.83	179	26.85	122.5	3.49	2.62	1470.
190	4.25	33.80	189	26.88	120.0	3.61	2.85	1469.
200	4.17	33.84	199	26.87	120.6	3.73	3.09	1469.
210	4.09	33.86	208	26.90	118.4	3.85	3.34	1469.
220	4.05	33.88	213	26.91	116.7	3.97	3.60	1469.
230	4.00	33.87	228	26.91	116.7	4.09	3.87	1469.
240	3.95	33.90	236	26.94	114.2	4.20	4.14	1469.
250	3.92	33.91	248	26.95	113.8	4.32	4.40	1469.
260	3.93	33.93	256	26.97	111.9	4.43	4.70	1469.
270	3.89	33.94	263	26.98	110.9	4.54	5.00	1469.
280	3.83	33.94	273	26.98	110.6	4.65	5.34	1469.
290	3.82	33.95	286	26.99	109.5	4.76	5.66	1469.
300	3.79	33.96	296	27.00	109.1	4.87	5.99	1469.

PRESSURE, DB

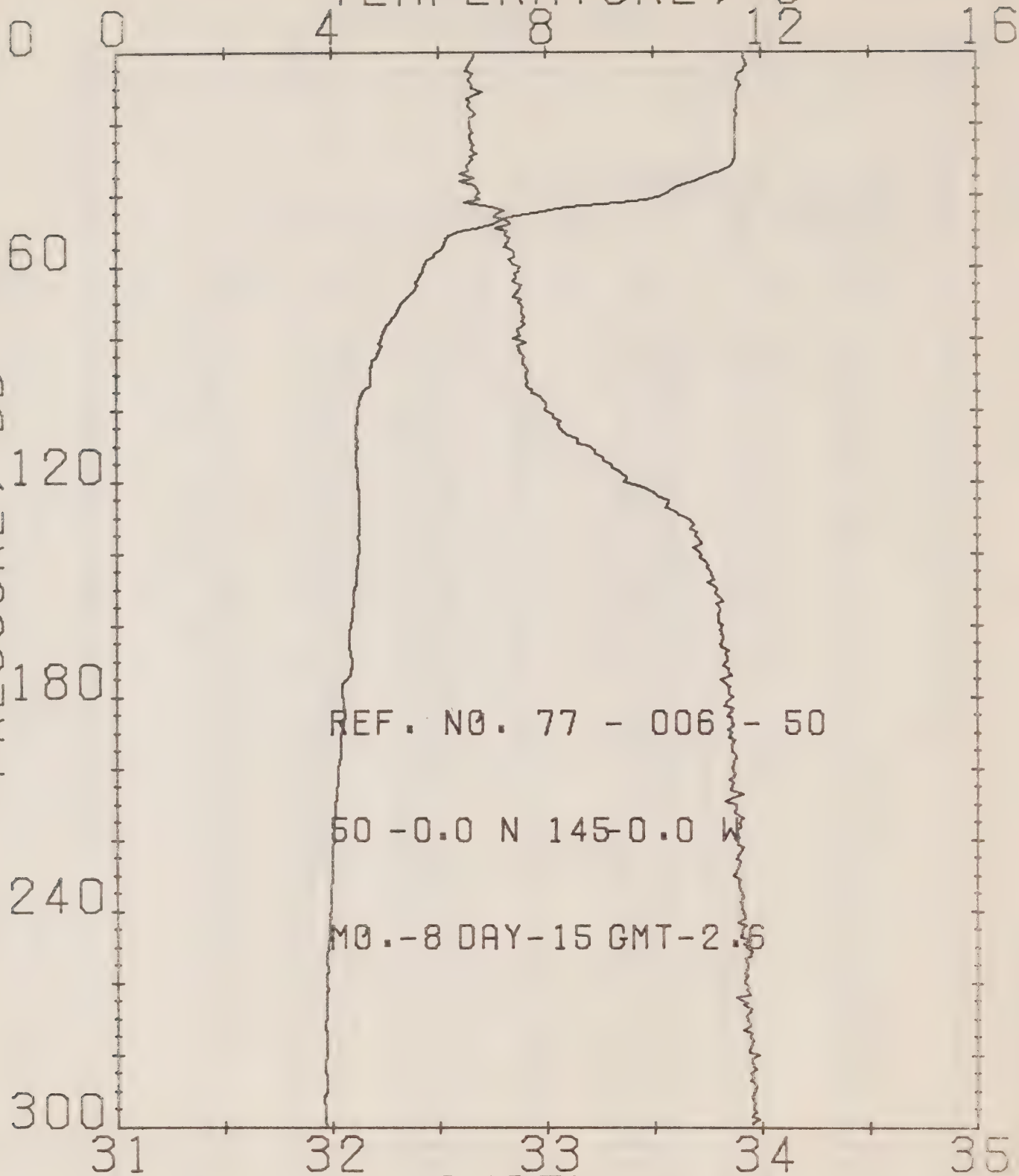
TEMPERATURE, C

REF. NO. 77 - 006 - 50

50 -0.0 N 145-0.0 W

MO.-8 DAY-15 GMT-2.6

SALINITY ‰



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6- 50

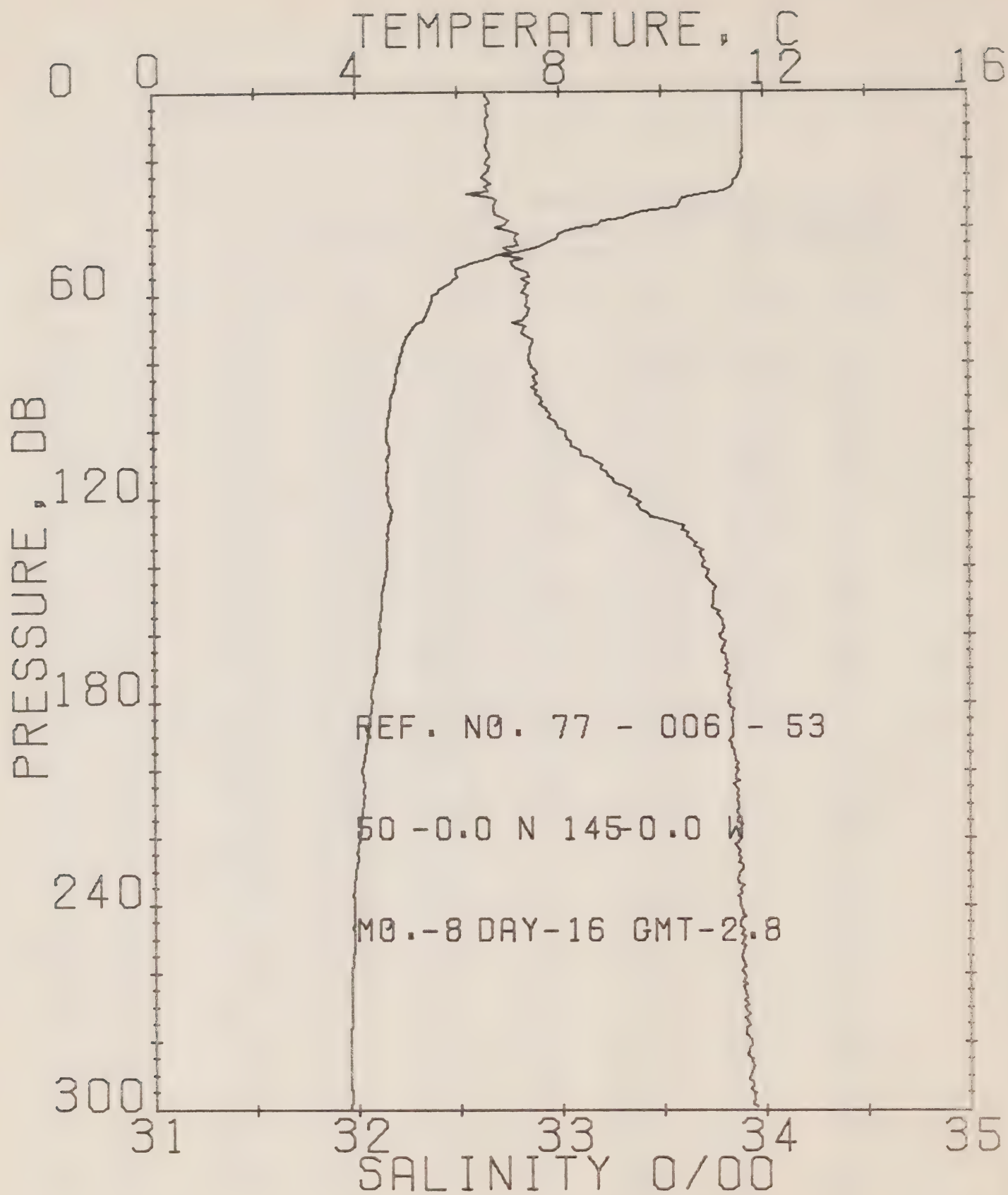
DATE 15/ 8/77

POSITION 50- .0N, 145- .0W

GMT 2.7

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	11.68	32.66	0	24.86	310.0	.00	.00	1493.
5	11.66	32.65	5	24.86	312.7	.16	.00	1493.
10	11.57	32.66	10	24.87	309.0	.31	.02	1493.
15	11.54	32.64	15	24.87	309.6	.46	.04	1493.
20	11.53	32.65	20	24.87	309.0	.62	.05	1493.
25	11.52	32.65	25	24.88	308.9	.77	.10	1493.
30	11.50	32.66	30	24.89	308.2	.93	.14	1493.
35	10.93	32.65	35	24.98	299.1	1.08	.19	1491.
40	10.11	32.68	40	25.15	283.5	1.23	.25	1488.
45	7.65	32.78	45	25.60	239.8	1.36	.30	1479.
50	6.44	32.81	50	25.79	221.7	1.47	.36	1475.
55	6.03	32.84	55	25.87	214.9	1.58	.42	1473.
60	5.71	32.87	60	25.93	208.5	1.69	.48	1472.
65	5.59	32.88	65	25.95	206.7	1.79	.55	1472.
70	5.50	32.87	70	25.98	204.0	1.90	.62	1471.
75	5.10	32.88	75	26.01	201.1	2.00	.69	1470.
80	4.92	32.85	80	26.00	202.1	2.10	.77	1469.
90	4.72	32.91	89	26.07	195.4	2.20	.94	1469.
100	4.49	33.00	99	26.17	186.5	2.49	1.10	1468.
110	4.48	33.20	109	26.33	171.3	2.66	1.32	1468.
120	4.47	33.36	119	26.46	158.9	2.83	1.51	1469.
130	4.51	33.65	129	26.68	138.1	2.98	1.70	1469.
140	4.49	33.72	139	26.74	132.9	3.11	1.89	1469.
150	4.40	33.79	149	26.81	126.4	3.24	2.08	1469.
160	4.35	33.82	159	26.85	124.0	3.37	2.26	1469.
170	4.37	33.84	169	26.85	122.5	3.49	2.46	1470.
180	4.21	33.86	179	26.88	119.4	3.61	2.70	1469.
190	4.17	33.86	189	26.86	119.2	3.73	2.90	1469.
200	4.11	33.86	199	26.89	118.7	3.85	3.10	1469.
210	4.06	33.88	209	26.91	117.0	3.97	3.41	1469.
220	4.01	33.89	210	26.92	115.9	4.08	3.60	1469.
230	3.99	33.87	220	26.91	117.1	4.20	3.90	1469.
240	3.96	33.91	230	26.95	113.5	4.31	4.20	1469.
250	3.92	33.93	240	26.96	112.1	4.43	4.48	1469.
260	3.90	33.92	250	26.96	112.4	4.54	4.77	1469.
270	3.87	33.93	260	26.97	111.3	4.65	5.06	1469.
280	3.88	33.98	270	27.01	108.0	4.76	5.39	1470.
290	3.88	33.97	280	27.00	109.0	4.87	5.70	1470.
300	3.88	33.97	290	27.00	109.2	4.98	6.03	1470.





## OFFSHORE OCEANOGRAPHY GROUP

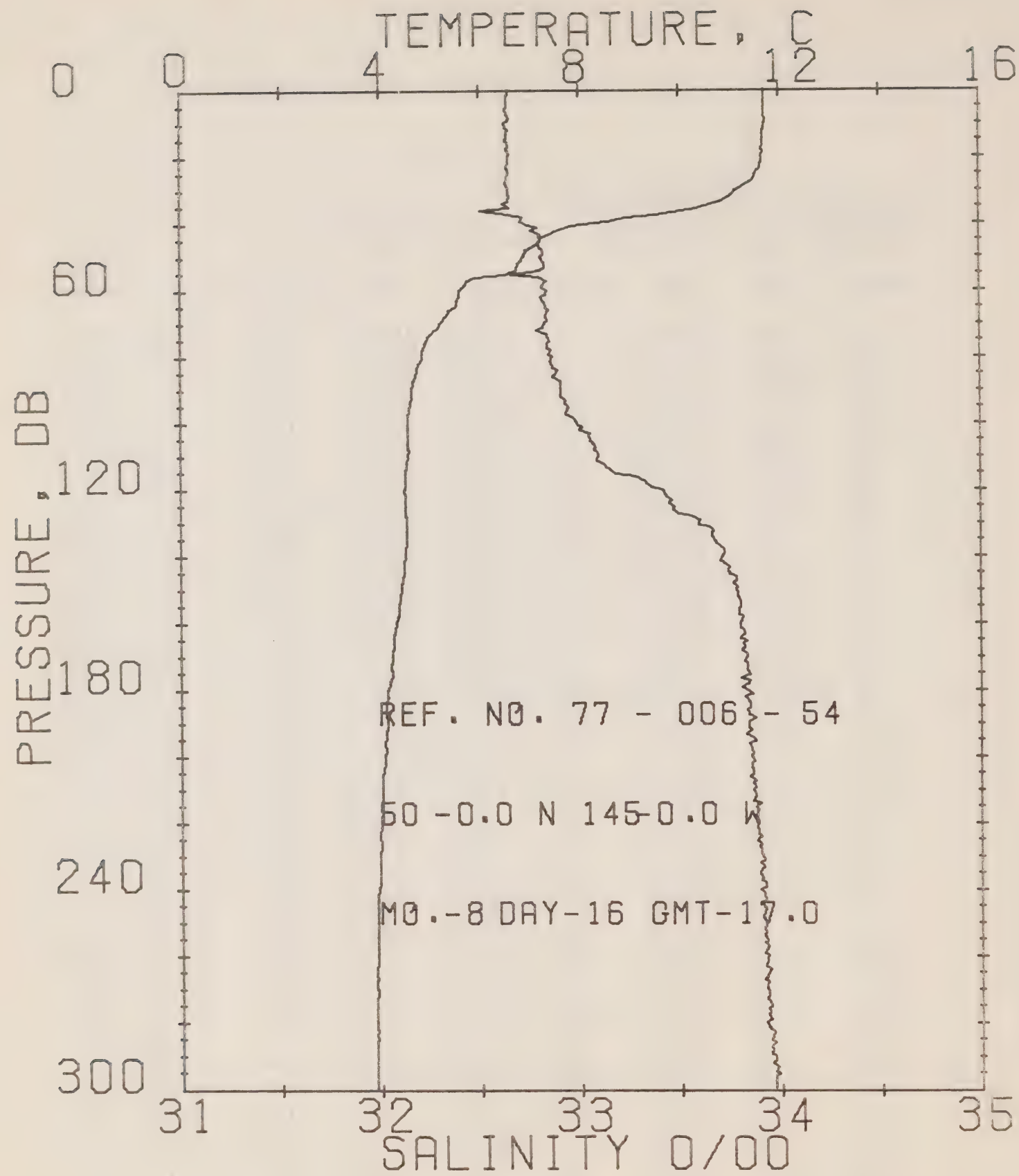
REFERENCE NO. 77- 6- 53

DATE 16/ 8/77

POSITION 50- .0N, 145- .0W

GMT 2.8

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	11.60	32.64	0	24.86	310.3	.00	.00	1493.
5	11.61	32.65	5	24.86	310.2	.15	.00	1493.
10	11.60	32.64	10	24.85	310.8	.31	.02	1493.
15	11.59	32.65	15	24.86	310.1	.47	.04	1493.
20	11.59	32.65	20	24.86	310.0	.62	.06	1493.
25	11.49	32.62	25	24.86	310.2	.77	.10	1493.
30	10.84	32.55	30	24.92	304.5	.93	.14	1491.
35	9.81	32.68	35	25.19	278.7	1.07	.19	1487.
40	8.39	32.69	40	25.43	256.5	1.20	.24	1482.
45	7.66	32.50	45	25.62	238.4	1.33	.29	1479.
50	6.56	32.76	50	25.76	224.6	1.44	.35	1474.
55	5.94	32.62	55	25.86	215.3	1.55	.41	1473.
60	5.52	32.84	60	25.93	208.8	1.66	.47	1471.
65	5.39	32.84	65	25.94	207.6	1.76	.54	1471.
70	5.11	32.62	70	25.96	205.7	1.87	.61	1470.
75	4.91	32.85	75	26.01	201.4	1.97	.66	1469.
80	4.64	32.85	80	26.01	200.9	2.07	.76	1469.
90	4.67	32.90	89	26.07	195.5	2.27	.93	1463.
100	4.59	33.02	99	26.16	185.5	2.46	1.12	1468.
110	4.60	33.20	109	26.32	172.1	2.64	1.31	1469.
120	4.61	33.36	119	26.44	160.5	2.81	1.51	1469.
130	4.60	33.62	129	26.65	140.7	2.96	1.70	1470.
140	4.57	33.59	139	26.71	135.5	3.10	1.89	1470.
150	4.48	33.75	149	26.76	130.6	3.23	2.09	1470.
160	4.44	33.77	159	26.79	128.1	3.36	2.29	1470.
170	4.57	33.61	169	26.83	124.8	3.48	2.50	1470.
180	4.27	33.62	179	26.85	123.0	3.60	2.72	1469.
190	4.16	33.64	189	26.87	120.7	3.73	2.93	1469.
200	4.08	33.86	199	26.90	118.0	3.85	3.19	1469.
210	4.10	33.87	209	26.90	118.1	3.97	3.44	1469.
220	4.02	33.87	218	26.91	117.2	4.08	3.69	1469.
230	3.96	33.87	228	26.92	116.5	4.20	3.90	1469.
240	3.92	33.87	238	26.92	116.2	4.32	4.24	1469.
250	3.92	33.89	246	26.94	114.7	4.43	4.53	1469.
260	3.68	33.89	256	26.94	114.5	4.55	4.83	1469.
270	3.67	33.90	268	26.95	113.9	4.66	5.13	1469.
280	3.64	33.93	276	26.97	111.4	4.77	5.43	1469.
290	3.64	33.92	286	26.97	112.0	4.88	5.77	1469.
300	3.63	33.96	296	27.00	109.4	5.00	6.11	1470.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6- 54

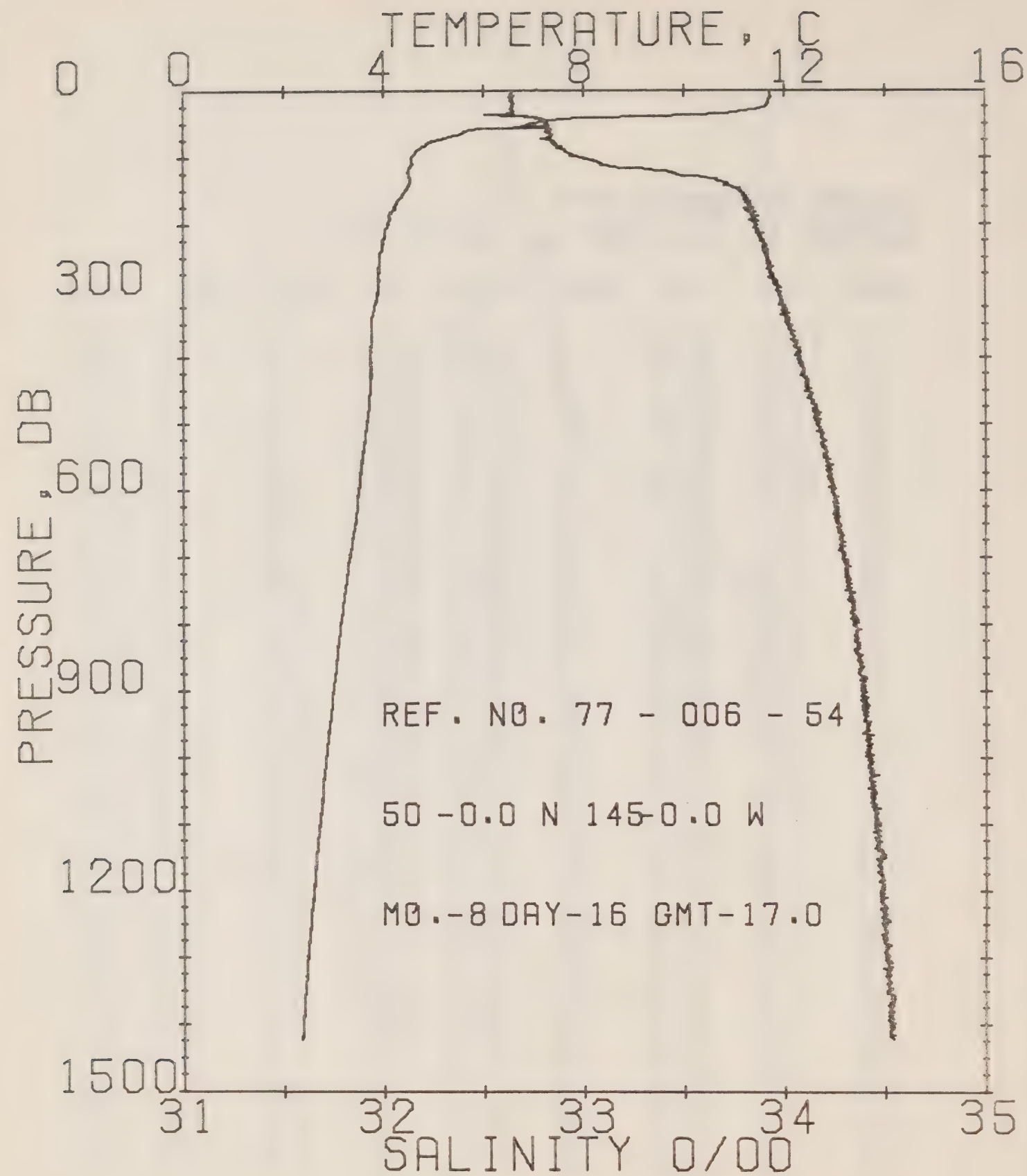
DATE 16/ 8/77

POSITION 50- .0N, 145- .0W

GMT 17.0

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	11.72	32.65	0	24.84	312.1	.00	.00	1494.
5	11.71	32.64	5	24.83	312.7	.16	.00	1494.
10	11.72	32.63	10	24.83	313.5	.31	.02	1494.
15	11.68	32.63	15	24.84	312.6	.47	.04	1494.
20	11.66	32.64	20	24.85	311.6	.62	.06	1494.
25	11.53	32.65	25	24.87	309.1	.78	.10	1493.
30	11.14	32.65	30	24.94	302.8	.93	.14	1492.
35	10.38	32.65	35	25.08	290.0	1.08	.19	1489.
40	8.01	32.74	40	25.52	247.7	1.22	.24	1481.
45	7.21	32.81	45	25.69	231.9	1.34	.29	1478.
50	6.88	32.81	50	25.73	227.4	1.45	.35	1476.
55	6.55	32.69	55	25.69	232.1	1.56	.41	1475.
60	5.62	32.84	60	25.92	210.2	1.67	.47	1472.
65	5.49	32.84	65	25.93	209.0	1.78	.54	1471.
70	5.21	32.83	70	25.96	206.3	1.88	.61	1470.
75	4.92	32.85	75	26.01	201.6	1.98	.69	1469.
80	4.85	32.86	80	26.03	199.9	2.09	.77	1469.
90	4.64	32.91	89	26.08	194.6	2.28	.94	1468.
100	4.56	32.99	99	26.15	187.7	2.47	1.12	1468.
110	4.55	33.09	109	26.24	179.8	2.66	1.32	1468.
120	4.48	33.41	119	26.50	155.2	2.83	1.52	1469.
130	4.53	33.60	129	26.64	142.1	2.98	1.71	1469.
140	4.50	33.72	139	26.74	132.9	3.11	1.90	1469.
150	4.42	33.78	149	26.80	127.2	3.24	2.09	1469.
160	4.33	33.80	159	26.82	124.8	3.37	2.29	1469.
170	4.24	33.84	169	26.86	121.6	3.49	2.50	1469.
180	4.14	33.84	179	26.87	120.6	3.61	2.71	1469.
190	4.14	33.84	189	26.87	120.2	3.73	2.94	1469.
200	4.09	33.86	199	26.89	118.8	3.85	3.18	1469.
210	4.03	33.86	209	26.90	117.8	3.97	3.42	1469.
220	4.00	33.89	218	26.92	115.7	4.09	3.68	1469.
230	3.97	33.91	228	26.94	114.0	4.20	3.94	1469.
240	3.94	33.90	238	26.94	114.3	4.32	4.22	1469.
250	3.92	33.92	248	26.96	112.7	4.43	4.50	1469.
260	3.91	33.93	258	26.97	111.9	4.54	4.79	1469.
270	3.91	33.93	268	26.96	112.2	4.66	5.09	1469.
280	3.91	33.93	278	26.96	112.4	4.77	5.41	1470.
290	3.90	33.97	288	27.00	109.4	4.88	5.73	1470.
300	3.89	33.96	298	26.99	109.7	4.99	6.06	1470.





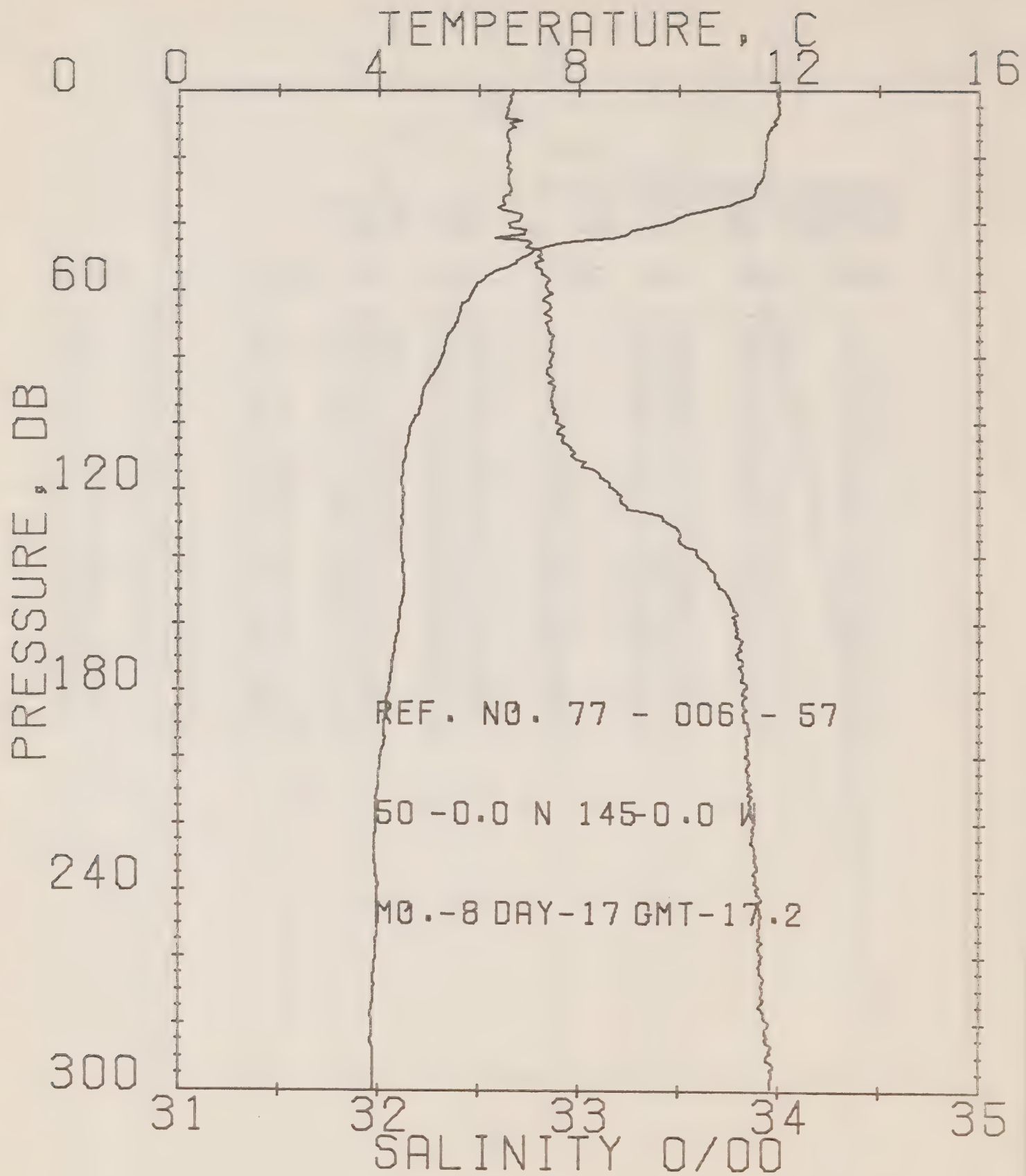
## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6- 54

DATE 16/ 8/77

POSITION 50- .0N, 145- .0W GMT 17.0

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	11.72	32.65	0	24.84	312.1	.00	.00	1494.
50	6.88	32.81	50	25.73	227.4	1.45	.35	1476.
100	4.56	32.99	99	26.15	187.7	2.47	1.12	1468.
150	4.42	33.78	149	26.80	127.2	3.24	2.09	1469.
200	4.09	33.86	199	26.89	118.8	3.85	3.18	1469.
250	3.92	33.92	248	26.96	112.7	4.43	4.50	1469.
300	3.89	33.96	298	26.99	109.7	4.99	6.06	1470.
350	3.76	34.01	347	27.05	104.7	5.52	7.82	1470.
400	3.75	34.07	397	27.10	100.6	6.03	9.77	1471.
450	3.73	34.12	446	27.14	97.4	6.52	11.91	1472.
500	3.66	34.17	496	27.19	93.0	7.00	14.21	1472.
550	3.58	34.20	545	27.21	90.5	7.46	16.66	1473.
600	3.49	34.24	595	27.26	86.8	7.90	19.25	1473.
650	3.42	34.27	644	27.29	84.5	8.33	21.98	1474.
700	3.31	34.29	694	27.31	82.1	8.74	24.84	1474.
750	3.22	34.32	743	27.34	79.5	9.15	27.81	1475.
800	3.13	34.34	793	27.37	76.8	9.53	30.87	1475.
850	3.06	34.37	842	27.40	74.3	9.91	34.04	1476.
900	2.97	34.38	891	27.42	72.9	10.28	37.31	1476.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6- 57

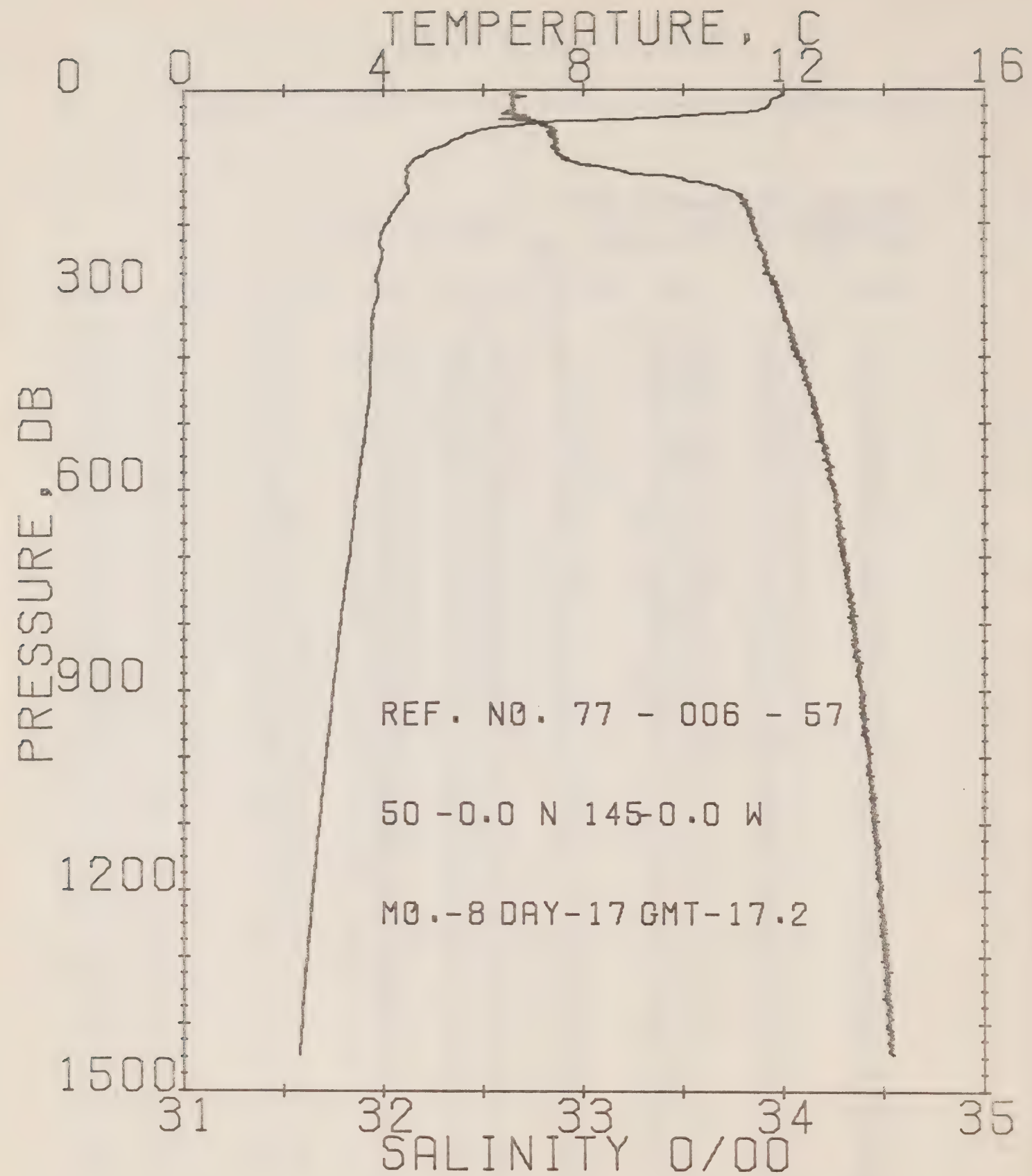
DATE 17/ 8/77

POSITION 50- .0N, 145- .0W

GMT 17.2

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	11.96	32.67	0	24.81	314.8	.00	.00	1494.
5	11.99	32.64	5	24.79	317.3	.16	.00	1495.
10	11.94	32.66	10	24.81	315.0	.32	.02	1494.
15	11.75	32.64	15	24.83	313.1	.47	.04	1494.
20	11.73	32.64	20	24.83	313.3	.63	.06	1494.
25	11.68	32.65	25	24.85	311.8	.79	.10	1494.
30	11.51	32.66	30	24.89	308.1	.94	.14	1493.
35	10.74	32.60	35	24.98	299.6	1.09	.19	1491.
40	9.71	32.65	40	25.19	279.5	1.24	.25	1487.
45	8.06	32.72	45	25.50	250.1	1.37	.31	1481.
50	6.89	32.79	50	25.72	228.9	1.49	.36	1477.
55	6.24	32.82	55	25.82	219.1	1.60	.42	1474.
60	5.87	32.85	60	25.89	212.5	1.71	.49	1473.
65	5.64	32.86	65	25.93	209.0	1.81	.55	1472.
70	5.56	32.84	70	25.92	209.7	1.92	.63	1472.
75	5.34	32.86	75	25.96	205.8	2.02	.70	1471.
80	5.26	32.87	80	25.98	204.1	2.12	.78	1471.
90	4.88	32.87	89	26.03	199.7	2.33	.96	1469.
100	4.68	32.89	99	26.06	196.5	2.52	1.15	1468.
110	4.52	32.96	109	26.14	189.4	2.72	1.36	1468.
120	4.47	33.17	119	26.31	173.5	2.90	1.57	1468.
130	4.47	33.44	129	26.52	153.4	3.06	1.78	1469.
140	4.48	33.59	139	26.64	142.1	3.21	1.98	1469.
150	4.50	33.73	149	26.74	132.4	3.35	2.18	1470.
160	4.41	33.78	159	26.80	127.3	3.48	2.39	1470.
170	4.29	33.80	169	26.83	124.7	3.60	2.60	1469.
180	4.21	33.83	179	26.86	121.9	3.72	2.82	1469.
190	4.12	33.84	189	26.88	120.0	3.85	3.05	1469.
200	4.04	33.83	199	26.88	119.8	3.97	3.28	1469.
210	3.98	33.86	209	26.91	117.2	4.08	3.53	1469.
220	3.94	33.88	218	26.93	115.5	4.20	3.79	1469.
230	3.92	33.89	228	26.93	115.1	4.32	4.05	1469.
240	3.98	33.89	238	26.93	115.4	4.43	4.33	1469.
250	3.97	33.91	248	26.95	113.9	4.55	4.62	1469.
260	3.94	33.92	258	26.96	113.0	4.66	4.91	1469.
270	3.91	33.92	268	26.96	112.7	4.77	5.22	1469.
280	3.87	33.95	278	26.99	110.1	4.89	5.53	1469.
290	3.90	33.95	288	26.98	110.7	5.00	5.85	1470.
300	3.89	33.97	298	27.00	109.1	5.11	6.18	1470.





## OFFSHORE OCEANOGRAPHY GROUP

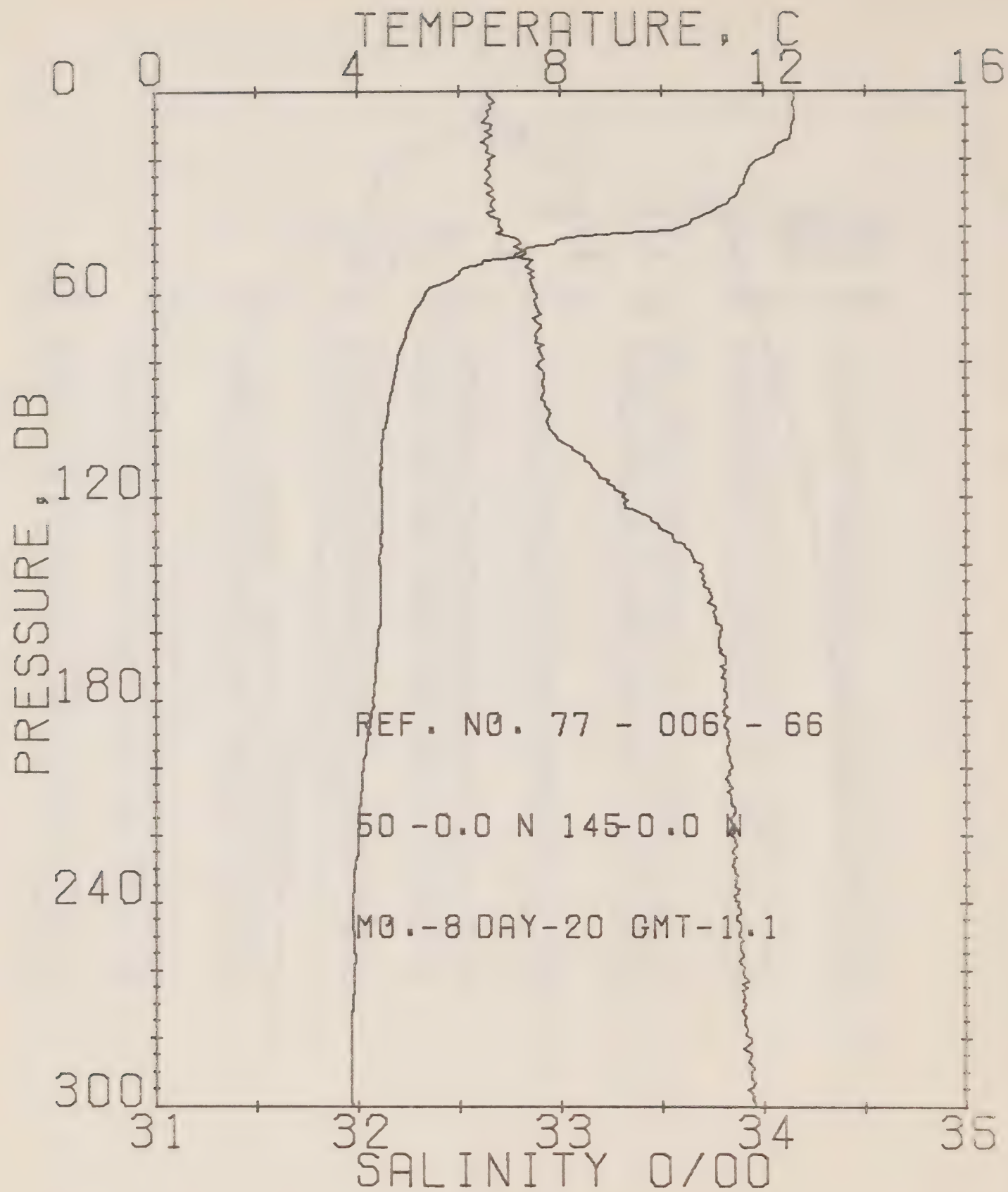
REFERENCE NO. 77- 6- 57

DATE 17/ 8/77

POSITION 50- .0N, 145- .0W

GMT 17.2

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	11.96	32.67	0	24.81	314.8	.00	.00	1494.
50	6.89	32.79	50	25.72	228.9	1.49	.36	1477.
100	4.68	32.89	99	26.06	196.5	2.52	1.15	1468.
150	4.50	33.73	149	26.74	132.4	3.35	2.18	1470.
200	4.04	33.83	199	26.88	119.8	3.97	3.28	1469.
250	3.97	33.91	248	26.95	113.9	4.55	4.62	1469.
300	3.89	33.97	298	27.00	109.1	5.11	6.18	1470.
350	3.78	34.02	347	27.06	104.3	5.64	7.95	1470.
400	3.75	34.06	397	27.09	101.7	6.15	9.91	1471.
450	3.73	34.12	446	27.14	96.9	6.65	12.04	1472.
500	3.64	34.18	496	27.19	92.6	7.12	14.34	1472.
550	3.55	34.22	545	27.23	88.8	7.58	16.78	1473.
600	3.47	34.25	595	27.27	86.0	8.01	19.35	1473.
650	3.38	34.28	644	27.30	83.2	8.44	22.05	1474.
700	3.31	34.29	694	27.31	82.1	8.85	24.89	1474.
750	3.21	34.33	743	27.35	78.7	9.25	27.85	1475.
800	3.13	34.34	793	27.37	76.8	9.64	30.91	1475.
850	3.06	34.37	842	27.40	74.3	10.02	34.09	1476.
900	2.97	34.39	891	27.42	72.4	10.39	37.38	1476.
950	2.92	34.40	941	27.44	71.2	10.75	40.77	1477.
1000	2.84	34.43	990	27.46	68.9	11.10	44.25	1478.
1050	2.77	34.43	1040	27.48	68.0	11.44	47.83	1478.
1100	2.71	34.45	1089	27.49	66.7	11.77	51.49	1479.
1150	2.64	34.47	1138	27.52	64.5	12.10	55.23	1479.
1200	2.58	34.47	1188	27.53	63.6	12.42	59.06	1480.
1250	2.52	34.49	1237	27.54	62.1	12.73	62.95	1480.
1300	2.47	34.51	1286	27.56	60.2	13.04	66.93	1481.
1350	2.41	34.50	1336	27.56	60.4	13.34	70.97	1482.
1400	2.36	34.53	1385	27.59	57.9	13.63	75.08	1482.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6- 66

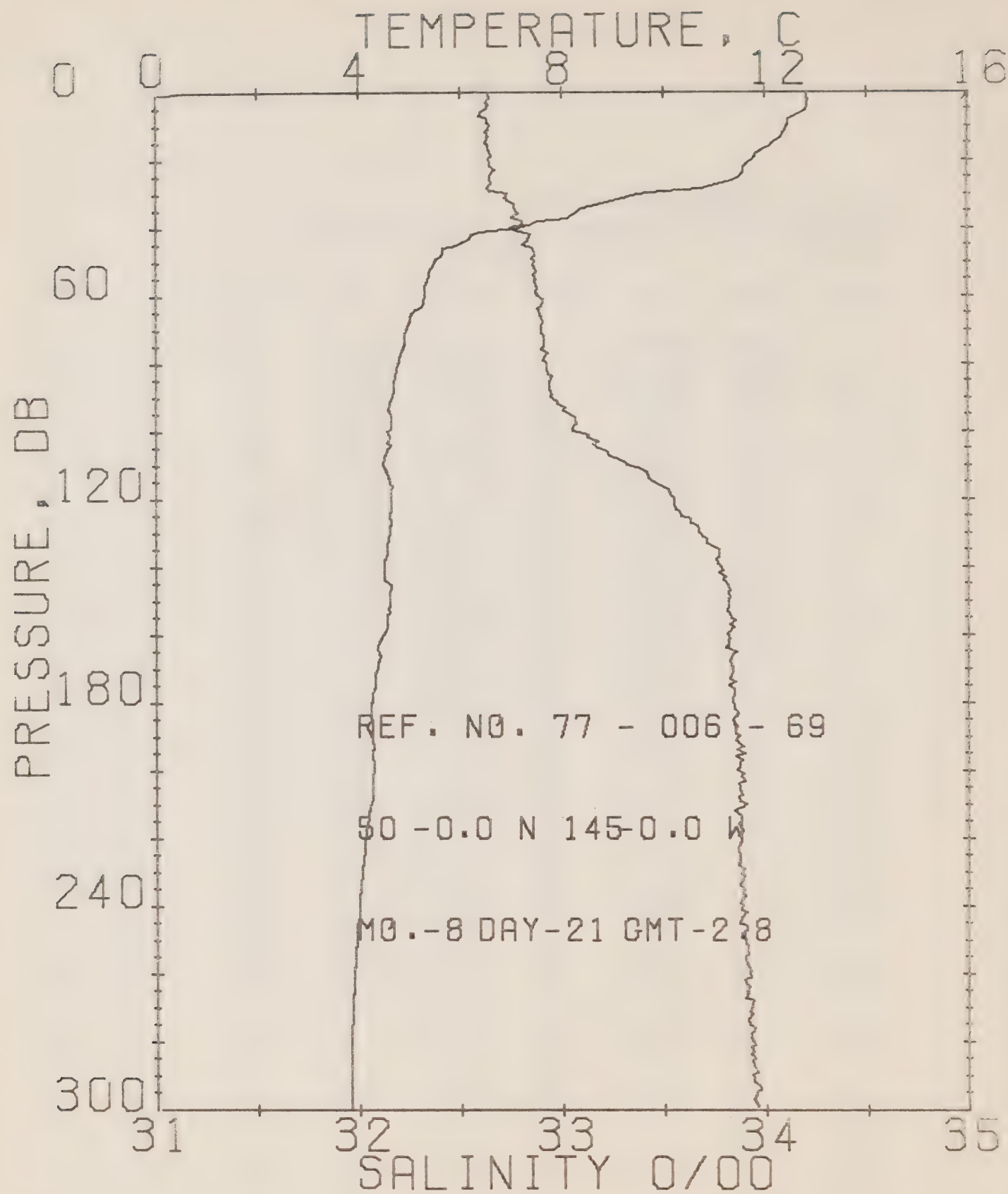
DATE 20/ 8/77

POSITION 50- .0N, 145- .0W

GMT 1.1

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.62	32.65	0	24.67	327.9	.00	.00	1497.
5	12.61	32.66	5	24.68	327.3	.16	.00	1497.
10	12.56	32.66	10	24.69	326.1	.33	.02	1497.
15	12.54	32.61	15	24.70	325.9	.49	.04	1496.
20	11.93	32.66	20	24.81	315.6	.65	.07	1495.
25	11.66	32.66	25	24.86	310.9	.81	.10	1494.
30	11.51	32.65	30	24.88	308.9	.96	.15	1493.
35	11.04	32.68	35	24.98	299.0	1.12	.20	1492.
40	10.41	32.70	40	25.11	287.0	1.26	.25	1490.
45	7.89	32.81	45	25.59	241.0	1.39	.31	1480.
50	6.60	32.80	50	25.81	220.5	1.51	.36	1475.
55	5.91	32.87	55	25.91	210.9	1.62	.42	1473.
60	5.54	32.88	60	25.98	203.6	1.72	.48	1471.
65	5.12	32.89	65	26.02	200.7	1.82	.55	1470.
70	4.99	32.91	70	26.05	198.0	1.92	.62	1469.
75	4.68	32.91	75	26.06	196.4	2.02	.69	1469.
80	4.79	32.90	80	26.06	196.8	2.12	.77	1469.
90	4.64	32.91	89	26.09	194.1	2.31	.94	1460.
100	4.52	32.95	99	26.13	190.3	2.51	1.12	1460.
110	4.46	33.15	109	26.29	175.0	2.69	1.32	1460.
120	4.49	33.31	119	26.42	163.1	2.86	1.52	1469.
130	4.47	33.51	129	26.57	148.2	3.01	1.72	1469.
140	4.44	33.70	139	26.73	133.6	3.16	1.91	1469.
150	4.46	33.75	149	26.77	130.1	3.29	2.10	1470.
160	4.41	33.79	159	26.81	126.6	3.42	2.31	1470.
170	4.35	33.79	169	26.81	126.0	3.54	2.52	1469.
180	4.30	33.81	179	26.83	124.5	3.67	2.74	1469.
190	4.19	33.82	189	26.85	122.5	3.79	2.96	1469.
200	4.10	33.85	199	26.88	119.6	3.91	3.22	1469.
210	4.05	33.84	209	26.88	119.7	4.03	3.47	1469.
220	4.01	33.84	218	26.89	119.2	4.15	3.73	1469.
230	3.93	33.86	228	26.91	117.2	4.27	4.00	1469.
240	3.89	33.88	238	26.93	115.6	4.39	4.26	1469.
250	3.92	33.88	248	26.92	115.8	4.50	4.57	1469.
260	3.93	33.90	258	26.94	114.3	4.62	4.86	1469.
270	3.88	33.91	268	26.96	113.1	4.73	5.17	1469.
280	3.87	33.93	278	26.97	111.3	4.84	5.49	1469.
290	3.87	33.94	288	26.98	111.0	4.95	5.81	1470.
300	3.89	33.95	298	26.98	110.6	5.07	6.15	1470.





## OFFSHORE OCEANOGRAPHY GROUP

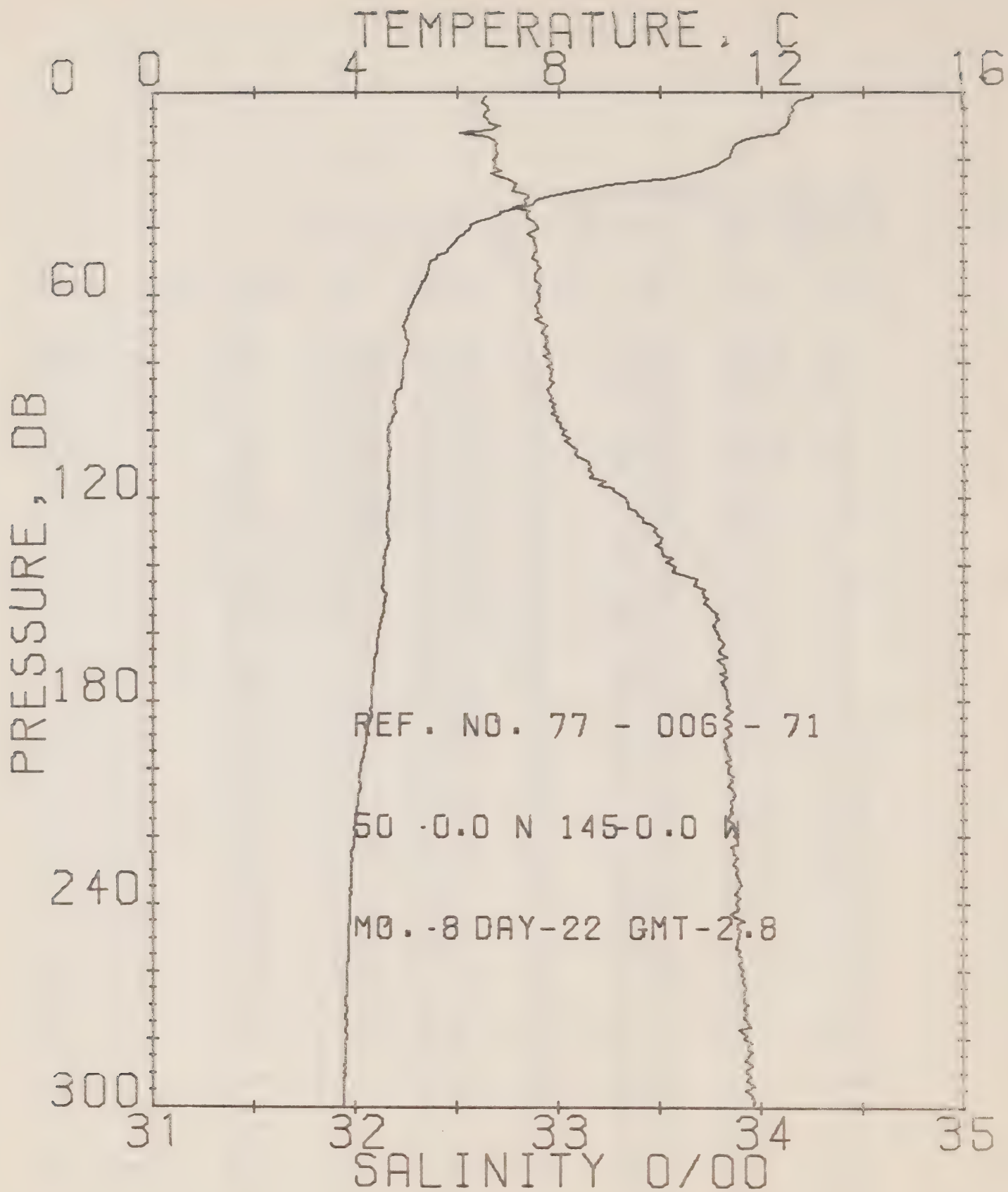
REFERENCE NO. 77- 6- 69

DATE 21/ 8/77

POSITION 50- .0N, 145- .0W

GMT 2.8

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.84	32.84	0	24.62	332.6	.00	.00	1497.
5	12.81	32.83	5	24.62	333.0	.17	.00	1497.
10	12.43	32.85	10	24.70	325.0	.33	.02	1496.
15	12.14	32.83	15	24.74	321.4	.49	.04	1495.
20	11.73	32.84	20	24.83	313.2	.65	.07	1494.
25	11.48	32.85	25	24.88	308.2	.81	.10	1493.
30	9.50	32.73	30	25.29	270.0	.95	.14	1486.
35	8.31	32.77	35	25.51	249.2	1.08	.19	1482.
40	7.12	32.75	40	25.66	234.8	1.20	.23	1477.
45	5.94	32.81	45	25.85	216.0	1.31	.28	1473.
50	5.49	32.87	50	25.95	206.4	1.42	.33	1471.
55	5.35	32.87	55	25.97	204.7	1.52	.38	1471.
60	5.30	32.88	60	25.98	203.6	1.62	.44	1470.
65	5.05	32.89	65	26.02	199.9	1.72	.51	1469.
70	4.95	32.90	70	26.04	198.4	1.82	.56	1469.
75	4.89	32.91	75	26.06	196.7	1.92	.65	1469.
80	4.77	32.93	80	26.08	194.5	2.02	.73	1469.
90	4.66	32.95	89	26.11	191.6	2.21	.89	1468.
100	4.56	33.05	99	26.20	183.0	2.40	1.07	1468.
110	4.47	33.32	109	26.43	161.9	2.57	1.26	1468.
120	4.63	33.55	119	26.59	146.6	2.72	1.44	1470.
130	4.60	33.88	129	26.69	137.0	2.87	1.62	1470.
140	4.50	33.78	139	26.79	128.2	3.00	1.80	1470.
150	4.60	33.82	149	26.81	126.2	3.12	1.99	1470.
160	4.48	33.82	159	26.82	125.4	3.25	2.19	1470.
170	4.36	33.84	169	26.85	122.7	3.37	2.39	1470.
180	4.25	33.84	179	26.86	121.5	3.50	2.61	1469.
190	4.26	33.87	189	26.88	119.4	3.62	2.84	1470.
200	4.29	33.86	199	26.88	120.2	3.74	3.06	1470.
210	4.22	33.91	203	26.92	116.3	3.85	3.32	1470.
220	4.11	33.88	218	26.91	117.2	3.97	3.58	1469.
230	4.06	33.88	228	26.91	116.8	4.09	3.85	1469.
240	4.00	33.89	238	26.92	115.9	4.21	4.13	1469.
250	3.94	33.90	248	26.94	114.7	4.32	4.42	1469.
260	3.89	33.92	258	26.96	112.2	4.43	4.71	1469.
270	3.86	33.93	268	26.97	111.3	4.55	5.02	1469.
280	3.84	33.93	278	26.98	111.2	4.66	5.33	1469.
290	3.84	33.94	283	26.98	111.0	4.77	5.65	1469.
300	3.84	33.97	298	27.01	108.6	4.88	5.96	1470.



## OFFSHORE OCEANOGRAPHY GROUP

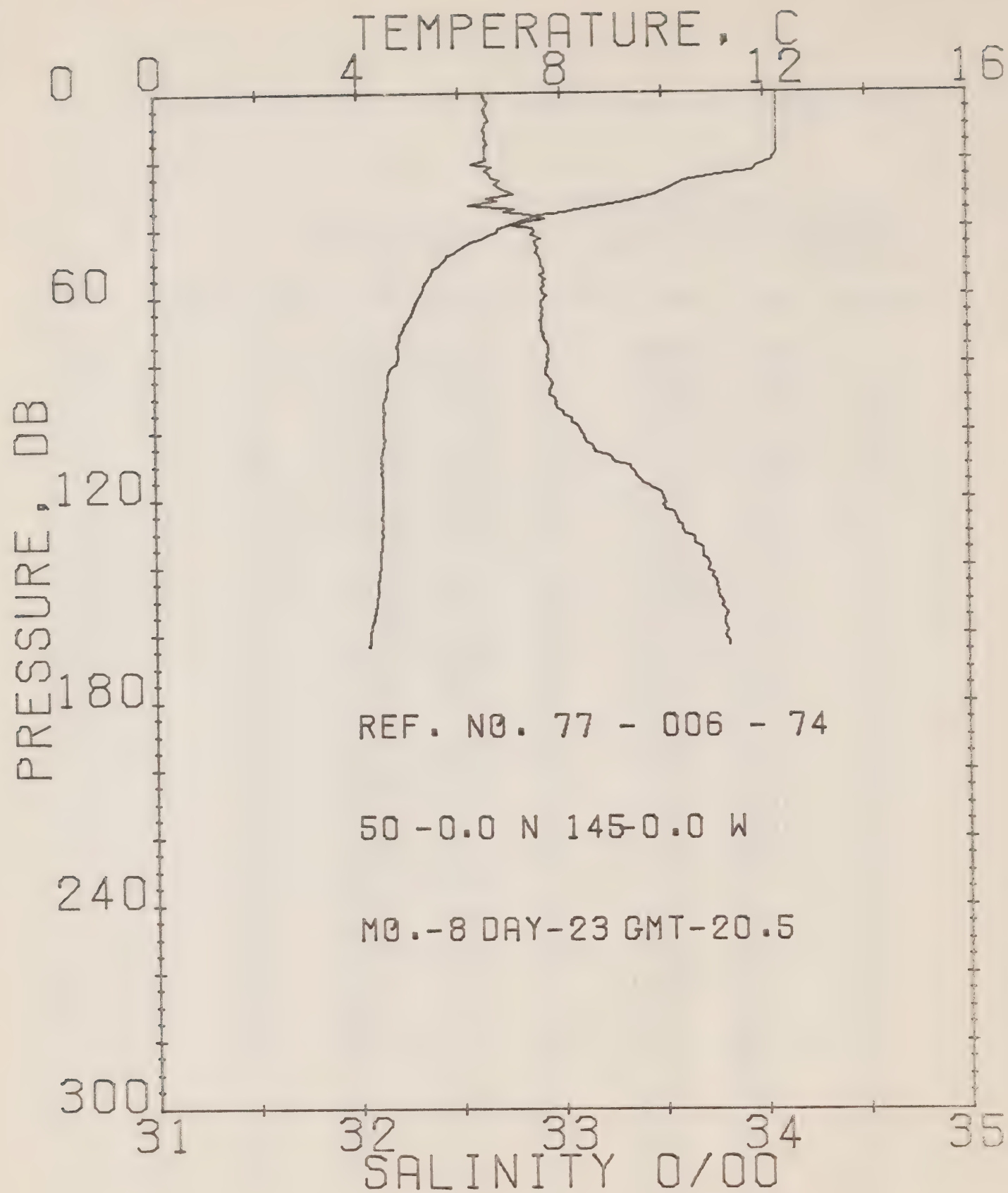
REFERENCE NO. 77- 8- 71

DATE 22/ 8/77

POSITION 50- .0N, 145- .0W GMT 2.8

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.99	32.84	0	24.59	335.7	.00	.00	1498.
5	12.82	32.85	5	24.67	328.0	.17	.00	1497.
10	12.44	32.70	10	24.75	320.9	.33	.02	1496.
15	11.47	32.89	15	24.92	305.0	.49	.04	1493.
20	11.22	32.88	20	24.95	301.7	.64	.06	1492.
25	10.27	32.71	25	25.14	283.7	.79	.10	1489.
30	7.94	32.83	30	25.60	239.9	.92	.15	1480.
35	6.91	32.84	35	25.75	225.6	1.03	.17	1476.
40	6.21	32.89	40	25.89	212.7	1.14	.21	1474.
45	5.87	32.88	45	25.92	210.0	1.25	.26	1472.
50	5.45	32.90	50	25.98	203.8	1.35	.31	1471.
55	5.33	32.88	55	25.98	203.7	1.45	.37	1470.
60	5.15	32.90	60	26.02	200.3	1.56	.42	1470.
65	5.00	32.89	65	26.03	199.2	1.66	.49	1469.
70	4.94	32.93	70	26.06	196.2	1.75	.56	1469.
75	5.00	32.93	75	26.06	196.5	1.85	.63	1469.
80	4.90	32.96	79	26.09	193.4	1.95	.71	1469.
90	4.74	32.97	89	26.12	191.2	2.14	.87	1469.
100	4.63	33.03	99	26.18	185.4	2.33	1.06	1468.
110	4.60	33.15	109	26.28	176.4	2.52	1.25	1469.
120	4.63	33.33	119	26.42	163.2	2.69	1.45	1469.
130	4.60	33.47	129	26.53	152.5	2.85	1.65	1469.
140	4.54	33.56	139	26.61	145.0	3.00	1.86	1469.
150	4.55	33.73	149	26.74	132.4	3.13	2.06	1470.
160	4.42	33.78	159	26.79	127.8	3.26	2.27	1470.
170	4.33	33.81	169	26.85	124.3	3.39	2.48	1469.
180	4.29	33.84	179	26.85	122.3	3.51	2.70	1469.
190	4.19	33.84	189	26.87	120.5	3.63	2.95	1469.
200	4.09	33.84	199	26.87	120.4	3.76	3.17	1469.
210	4.02	33.85	208	26.89	118.9	3.87	3.42	1469.
220	3.96	33.86	218	26.91	117.1	3.99	3.68	1469.
230	3.89	33.88	228	26.93	115.3	4.11	3.95	1469.
240	3.86	33.87	238	26.93	115.3	4.22	4.22	1469.
250	3.84	33.89	248	26.94	114.3	4.34	4.51	1469.
260	3.81	33.91	258	26.96	112.6	4.45	4.80	1469.
270	3.80	33.93	268	26.96	110.8	4.56	5.11	1469.
280	3.80	33.92	278	26.97	112.0	4.68	5.42	1469.
290	3.78	33.93	288	26.98	110.9	4.79	5.74	1469.
300	3.77	33.97	298	27.01	107.8	4.90	6.07	1469.





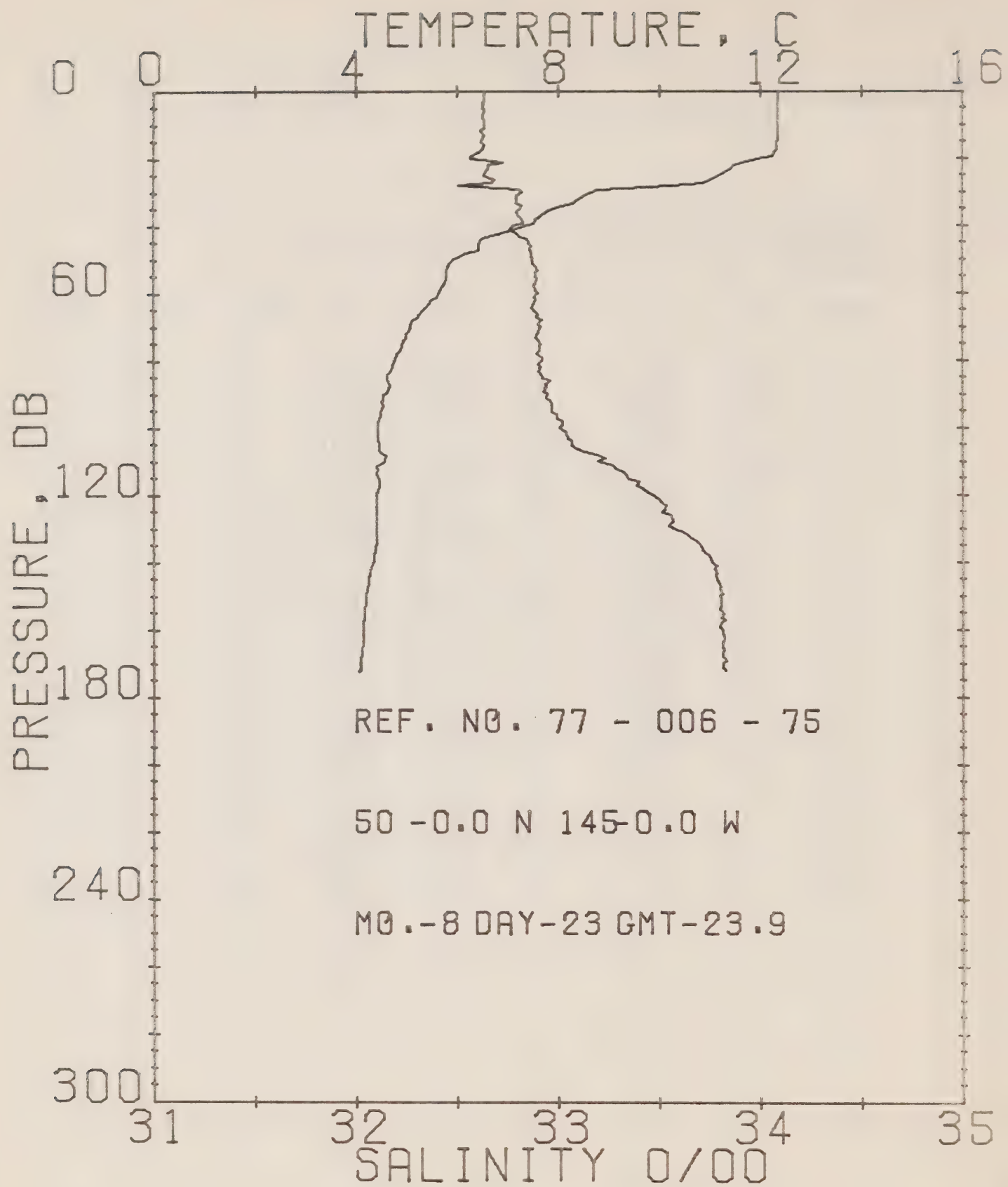
## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6- 74

DATE 23/ 8/ 77

POSITION 30- .0N, 145- .0W GMT 20.5

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.27	32.62	0	24.72	323.5	.00	.00	1495.
5	12.27	32.63	5	24.72	323.2	.16	.00	1495.
10	12.27	32.64	10	24.73	322.9	.32	.02	1490.
15	12.26	32.64	15	24.73	322.3	.48	.04	1496.
20	12.19	32.64	20	24.74	321.6	.65	.07	1495.
25	10.78	32.66	25	25.02	295.3	.80	.10	1491.
30	9.91	32.77	30	25.25	273.7	.94	.14	1488.
35	8.13	32.74	35	25.50	249.4	1.08	.15	1481.
40	6.61	32.85	40	25.78	223.2	1.19	.20	1476.
45	6.12	32.89	45	25.89	212.3	1.30	.20	1473.
50	5.68	32.91	50	25.96	205.6	1.41	.30	1472.
55	5.39	32.92	55	26.01	201.4	1.51	.32	1471.
60	5.24	32.93	60	26.03	199.2	1.61	.44	1470.
65	5.08	32.91	65	26.04	198.8	1.71	.50	1470.
70	4.89	32.91	70	26.05	197.0	1.81	.57	1469.
75	4.80	32.94	75	26.09	193.6	1.91	.64	1469.
80	4.75	32.93	80	26.09	193.6	2.00	.72	1469.
90	4.54	32.97	89	26.14	189.1	2.19	.89	1465.
100	4.51	33.10	99	26.25	179.0	2.38	1.07	1468.
110	4.47	33.33	109	26.43	161.4	2.55	1.20	1468.
120	4.48	33.50	119	26.57	148.9	2.71	1.40	1469.
130	4.47	33.61	129	26.65	140.8	2.85	1.60	1469.
140	4.42	33.72	139	26.75	131.4	2.99	1.80	1469.
150	4.35	33.79	149	26.81	126.2	3.11	1.95	1469.
160	4.21	33.80	159	26.84	123.7	3.20	2.15	1469.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6- 75

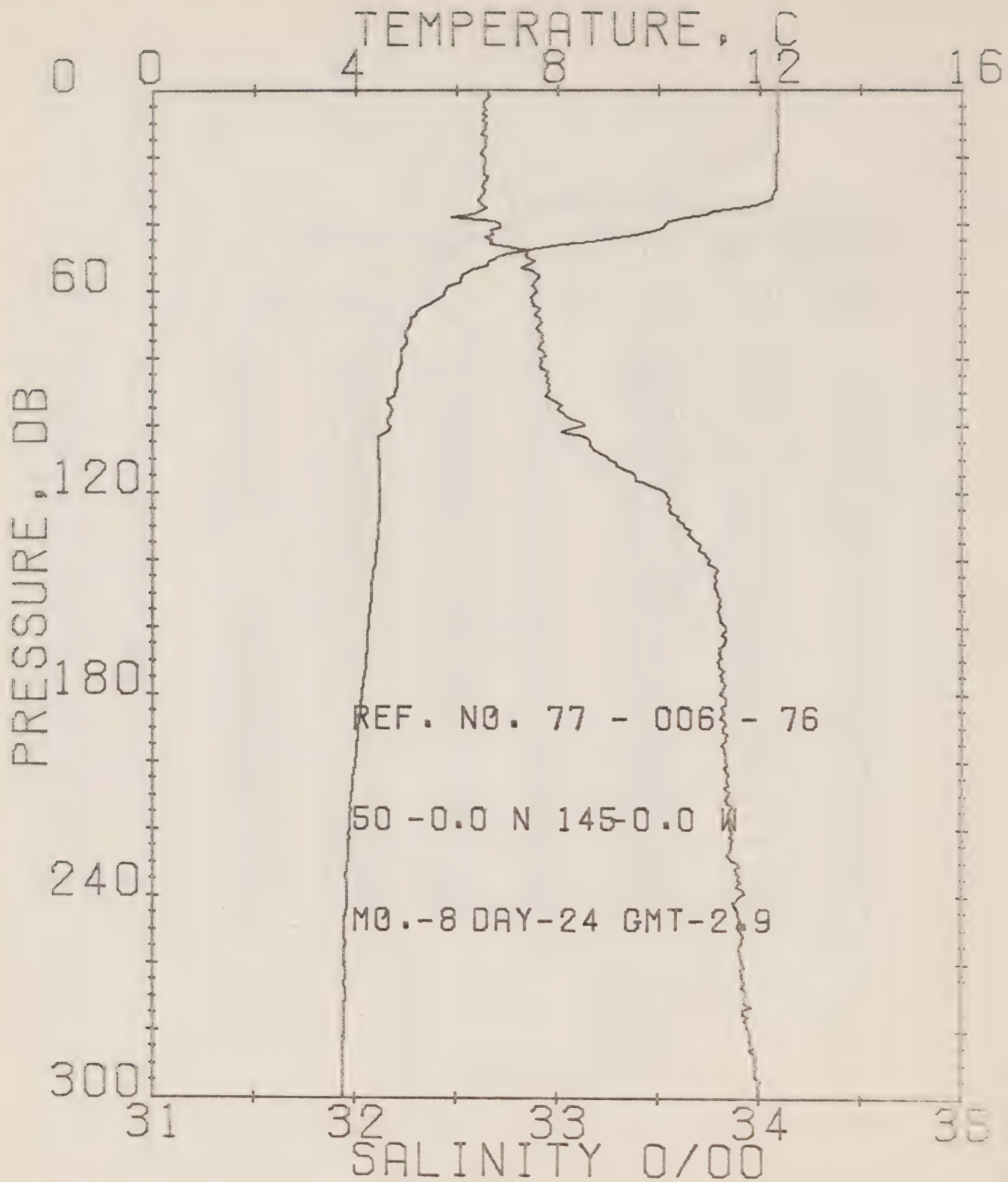
DATE 23/ 8/77

POSITION 50- .0N, 145- .0W

GMT 23.9

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.34	32.83	0	24.71	324.0	.00	.00	1496.
5	12.34	32.82	5	24.70	324.8	.16	.00	1496.
10	12.34	32.83	10	24.71	324.4	.32	.02	1496.
15	12.33	32.82	15	24.70	325.3	.49	.04	1496.
20	11.94	32.57	20	24.74	322.1	.65	.07	1495.
25	11.15	32.83	25	24.93	303.7	.80	.10	1492.
30	8.84	32.82	30	25.49	250.4	.95	.14	1485.
35	7.85	32.81	35	25.80	240.2	1.07	.16	1480.
40	7.32	32.78	40	25.65	235.3	1.19	.23	1478.
45	6.43	32.85	45	25.83	218.5	1.30	.26	1475.
50	5.93	32.87	50	25.90	211.2	1.41	.33	1475.
55	5.78	32.89	55	25.93	208.4	1.51	.36	1472.
60	5.63	32.90	60	25.96	206.0	1.62	.43	1472.
65	5.51	32.88	65	25.98	203.7	1.72	.51	1470.
70	5.06	32.91	70	26.04	198.4	1.82	.58	1470.
75	4.92	32.91	75	26.05	197.2	1.92	.65	1469.
80	4.75	32.92	80	26.08	194.9	2.02	.73	1469.
90	4.55	32.95	89	26.12	190.6	2.21	.90	1468.
100	4.43	33.01	99	26.18	185.0	2.40	1.06	1468.
110	4.54	33.20	109	26.32	171.9	2.58	1.27	1468.
120	4.40	33.47	119	26.55	150.5	2.74	1.46	1468.
130	4.40	33.56	129	26.63	143.2	2.88	1.64	1469.
140	4.31	33.76	139	26.79	127.6	3.02	1.83	1469.
150	4.19	33.80	149	26.84	123.6	3.14	2.01	1469.
160	4.13	33.81	159	26.85	122.1	3.26	2.21	1468.
170	4.07	33.82	169	26.86	121.4	3.38	2.41	1468.





## OFFSHORE OCEANOGRAPHY GROUP

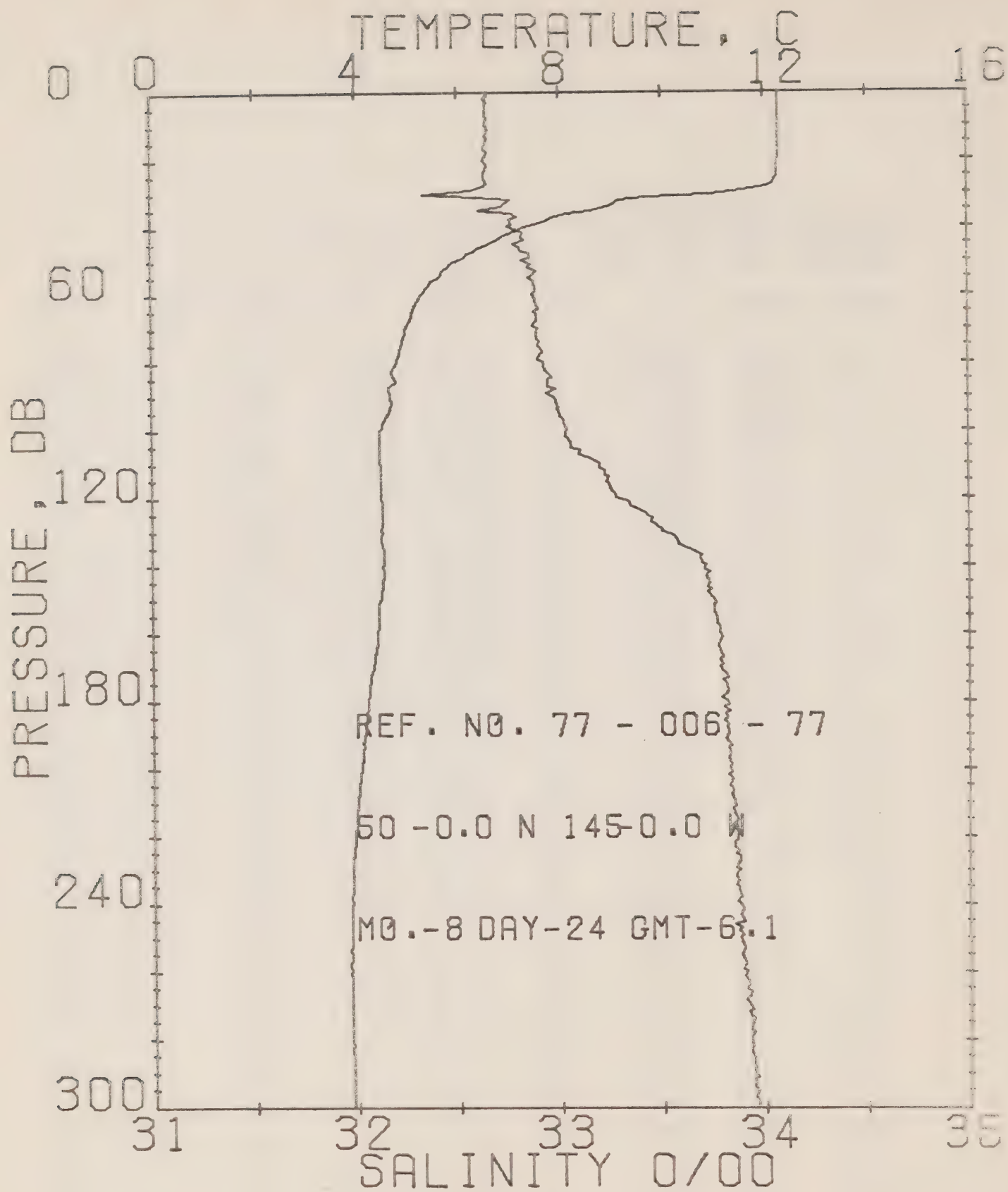
REFERENCE NO. 77- 6- 76

DATE 24/ 8/77

POSITION 50- .0N, 145- .0W

GMT 2.9

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.33	32.65	0	24.73	322.6	.00	.00	1490.
5	12.34	32.63	5	24.71	324.3	.16	.00	1490.
10	12.35	32.65	10	24.72	323.5	.32	.02	1490.
15	12.35	32.64	15	24.71	324.1	.49	.04	1490.
20	12.33	32.63	20	24.71	324.5	.65	.07	1490.
25	12.32	32.64	25	24.72	324.1	.81	.10	1490.
30	12.30	32.64	30	24.72	323.5	.97	.13	1490.
35	11.64	32.64	35	24.85	311.7	1.13	.20	1494.
40	10.13	32.71	40	25.17	281.7	1.28	.20	1489.
45	8.75	32.67	45	25.36	263.6	1.42	.32	1483.
50	6.79	32.85	50	25.78	223.5	1.54	.38	1470.
55	6.13	32.89	55	25.90	211.9	1.65	.43	1474.
60	5.77	32.89	60	25.94	207.8	1.75	.50	1472.
65	5.30	32.91	65	26.01	201.5	1.86	.50	1470.
70	5.06	32.91	70	26.04	198.4	1.96	.60	1470.
75	5.00	32.92	75	26.06	197.1	2.06	.70	1469.
80	4.91	32.92	80	26.06	196.6	2.15	.78	1469.
90	4.79	32.96	89	26.11	192.5	2.35	.93	1469.
100	4.69	33.13	99	26.26	178.3	2.54	1.13	1469.
110	4.47	33.25	109	26.37	167.1	2.71	1.32	1468.
120	4.48	33.53	119	26.59	146.3	2.87	1.50	1469.
130	4.46	33.63	129	26.67	138.8	3.01	1.69	1469.
140	4.40	33.75	139	26.77	129.5	3.15	1.87	1469.
150	4.32	33.80	149	26.82	125.3	3.27	2.00	1469.
160	4.26	33.83	159	26.85	122.1	3.40	2.20	1469.
170	4.22	33.80	169	26.83	124.2	3.52	2.40	1469.
180	4.13	33.81	179	26.85	122.5	3.64	2.60	1469.
190	4.05	33.82	189	26.87	120.9	3.76	2.91	1469.
200	4.01	33.84	199	26.88	119.4	3.88	3.10	1469.
210	3.92	33.84	209	26.90	117.9	4.00	3.39	1469.
220	3.88	33.85	218	26.91	117.0	4.12	3.60	1469.
230	3.84	33.88	228	26.94	114.6	4.24	3.92	1468.
240	3.85	33.91	238	26.96	112.7	4.35	4.19	1469.
250	3.79	33.90	248	26.96	112.8	4.46	4.47	1469.
260	3.79	33.91	258	26.97	111.9	4.58	4.77	1469.
270	3.60	33.93	268	26.98	111.0	4.69	5.07	1469.
280	3.78	33.95	278	27.00	109.1	4.80	5.30	1469.
290	3.76	33.98	288	27.02	107.0	4.91	5.69	1469.
300	3.75	34.00	298	27.04	105.5	5.01	6.01	1469.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6- 77

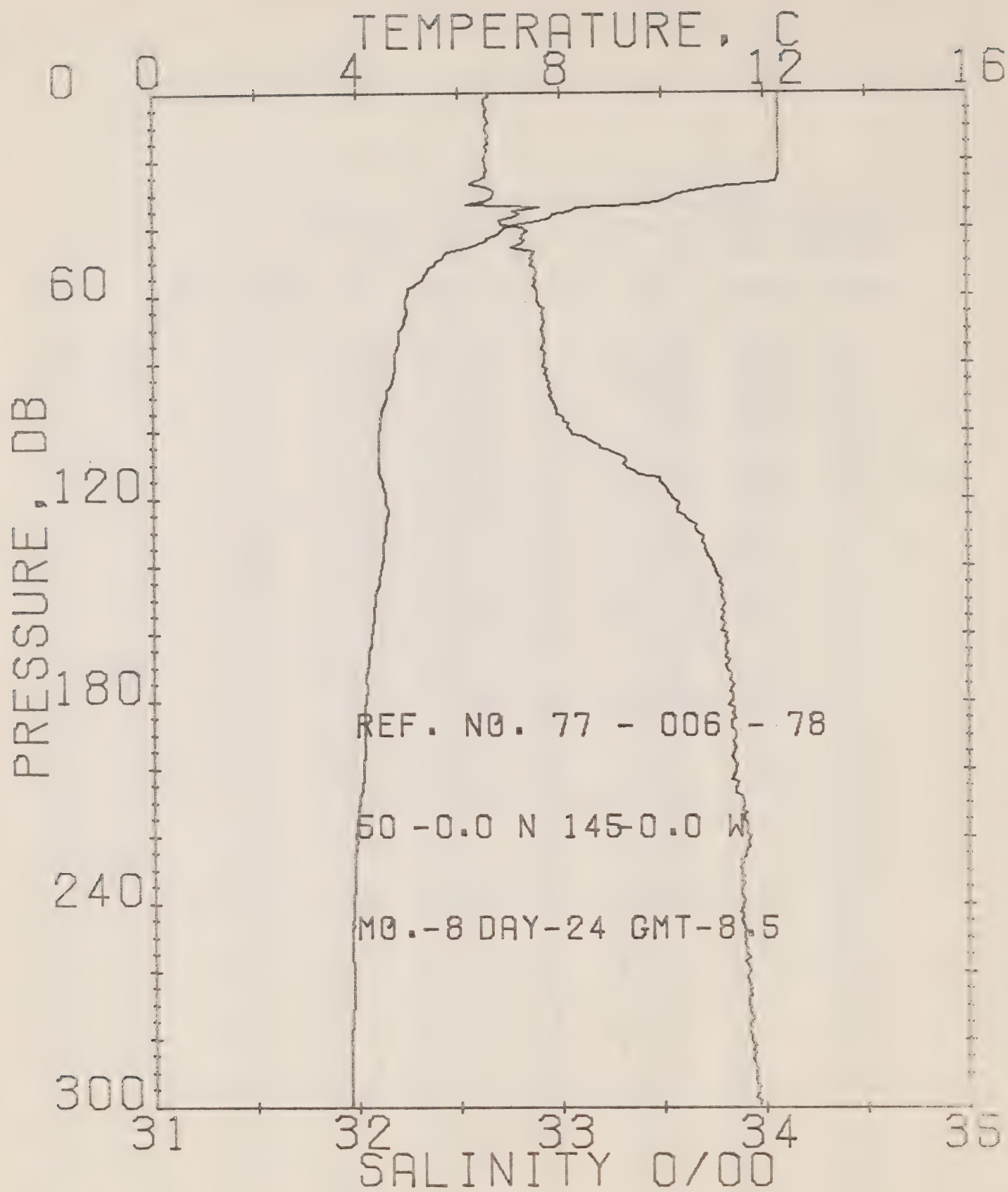
DATE 24/ 8/77

POSITION 50- .0N, 145- .0W

GMT 6.1

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.28	32.65	0	24.73	322.0	.00	.00	1495.
5	12.29	32.64	5	24.73	322.7	.16	.00	1496.
10	12.29	32.64	10	24.73	322.9	.32	.02	1496.
15	12.29	32.64	15	24.73	322.9	.48	.04	1496.
20	12.27	32.63	20	24.72	323.5	.65	.07	1496.
25	12.26	32.63	25	24.73	323.3	.81	.10	1496.
30	11.06	32.38	30	24.75	321.1	.97	.15	1491.
35	8.64	32.62	35	25.33	265.5	1.10	.19	1483.
40	7.34	32.75	40	25.63	237.6	1.23	.24	1478.
45	6.60	32.78	45	25.75	225.9	1.34	.29	1475.
50	5.96	32.82	50	25.86	215.7	1.45	.34	1473.
55	5.61	32.85	55	25.92	209.4	1.56	.40	1472.
60	5.29	32.87	60	25.98	204.4	1.66	.46	1470.
65	5.11	32.87	65	26.00	201.8	1.76	.52	1470.
70	4.97	32.89	70	26.03	199.2	1.86	.59	1469.
75	4.88	32.90	75	26.05	197.7	1.96	.67	1469.
80	4.79	32.92	80	26.07	195.2	2.06	.74	1469.
90	4.66	32.96	89	26.12	190.7	2.25	.91	1468.
100	4.47	33.03	99	26.20	183.4	2.44	1.09	1468.
110	4.48	33.19	109	26.32	171.7	2.62	1.26	1468.
120	4.48	33.28	119	26.39	165.6	2.79	1.46	1469.
130	4.50	33.50	129	26.57	149.0	2.94	1.68	1469.
140	4.52	33.71	139	26.73	133.6	3.08	1.87	1470.
150	4.46	33.75	149	26.77	129.9	3.21	2.07	1470.
160	4.40	33.78	159	26.80	127.1	3.34	2.27	1470.
170	4.32	33.78	169	26.81	126.4	3.47	2.46	1469.
180	4.22	33.81	179	26.84	123.1	3.59	2.71	1469.
190	4.14	33.82	189	26.86	121.7	3.72	2.94	1469.
200	4.07	33.83	199	26.87	120.6	3.84	3.16	1469.
210	4.00	33.84	209	26.89	118.8	3.96	3.43	1469.
220	3.95	33.86	218	26.91	117.2	4.08	3.69	1469.
230	3.90	33.88	228	26.93	115.5	4.19	3.96	1469.
240	3.88	33.87	238	26.93	115.6	4.31	4.26	1469.
250	3.86	33.88	248	26.93	115.3	4.42	4.52	1469.
260	3.85	33.91	258	26.95	113.1	4.54	4.82	1469.
270	3.87	33.92	268	26.96	112.4	4.65	5.12	1469.
280	3.88	33.93	278	26.97	112.0	4.76	5.44	1469.
290	3.90	33.95	288	26.98	110.6	4.87	5.76	1470.
300	3.89	33.96	298	26.99	109.6	4.99	6.09	1470.





## OFFSHORE OCEANOGRAPHY GROUP

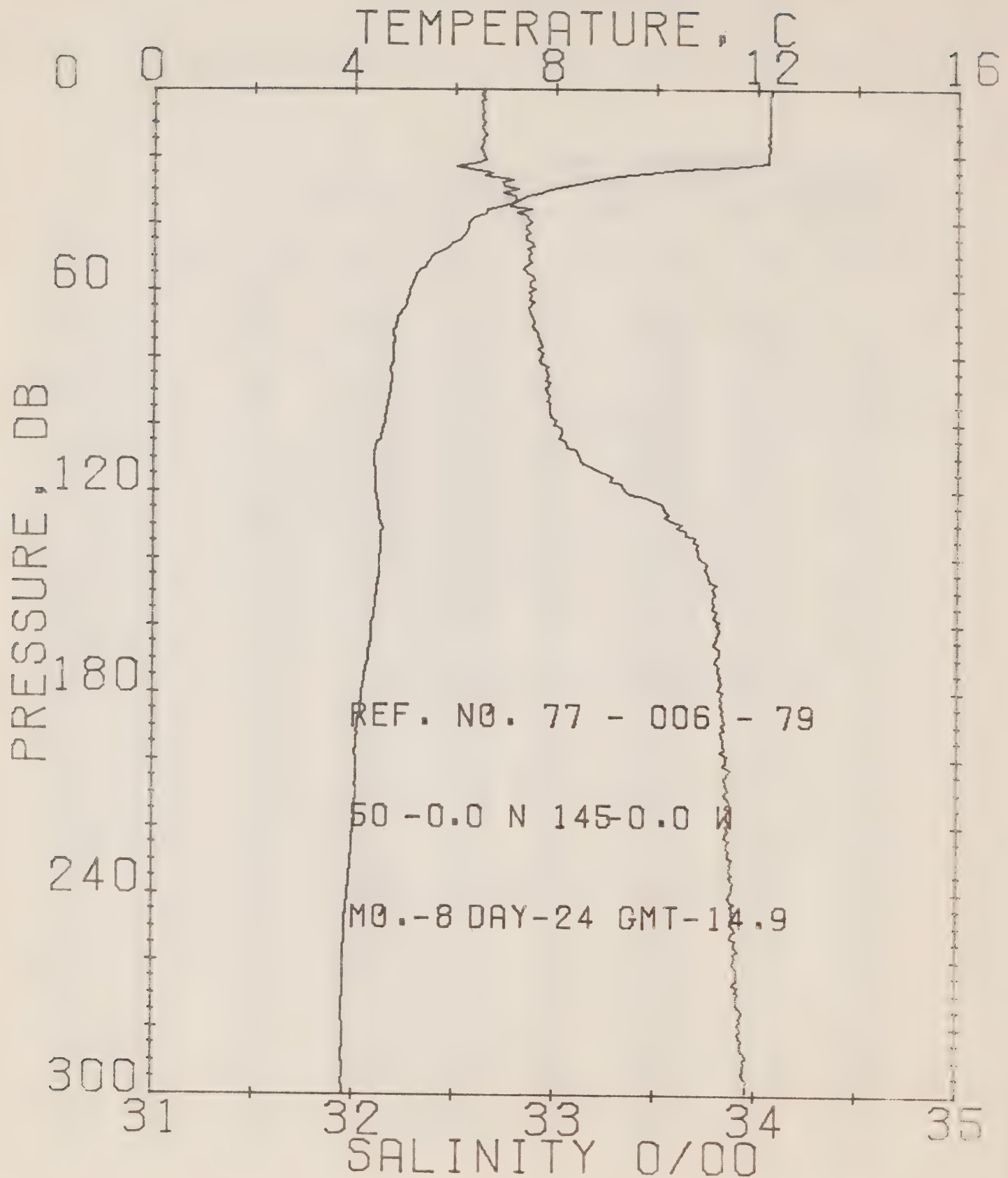
REFERENCE NO. 77- 6- 78

DATE 24/ 8/77

POSITION 50- .0N, 145- .0W

GMT 8.5

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.30	32.64	0	24.73	322.6	.00	.00	1496.
5	12.29	32.64	5	24.72	323.1	.16	.00	1496.
10	12.30	32.63	10	24.72	323.5	.32	.02	1496.
15	12.30	32.64	15	24.73	322.9	.48	.04	1496.
20	12.29	32.63	20	24.71	324.2	.65	.07	1496.
25	12.27	32.63	25	24.72	323.7	.81	.10	1496.
30	10.35	32.67	30	25.10	287.8	.96	.15	1489.
35	8.21	32.78	35	25.52	247.5	1.10	.19	1481.
40	6.92	32.81	40	25.73	227.6	1.22	.24	1476.
45	6.34	32.80	45	25.80	221.4	1.33	.29	1474.
50	5.56	32.87	50	25.95	207.2	1.44	.34	1471.
55	5.30	32.88	55	25.98	203.7	1.54	.39	1470.
60	4.99	32.88	60	26.03	199.8	1.64	.45	1469.
65	4.98	32.90	65	26.04	198.3	1.74	.51	1469.
70	4.84	32.91	70	26.06	196.5	1.84	.56	1469.
75	4.61	32.91	75	26.07	195.9	1.94	.60	1469.
80	4.75	32.92	80	26.08	194.7	2.04	.73	1469.
90	4.58	32.95	89	26.12	191.0	2.23	.90	1466.
100	4.43	33.05	99	26.21	182.2	2.41	1.06	1468.
110	4.44	33.51	109	26.42	162.7	2.57	1.26	1468.
120	4.56	33.55	119	26.60	146.2	2.74	1.44	1469.
130	4.55	33.66	129	26.69	137.2	2.88	1.62	1469.
140	4.49	33.74	139	26.76	130.7	3.01	1.80	1470.
150	4.35	33.79	149	26.81	125.9	3.14	1.99	1469.
160	4.27	33.81	159	26.84	123.8	3.27	2.19	1469.
170	4.19	33.81	169	26.84	123.1	3.39	2.40	1469.
180	4.16	33.84	179	26.87	120.3	3.51	2.61	1469.
190	4.13	33.85	189	26.88	119.3	3.63	2.84	1469.
200	4.11	33.86	199	26.89	119.0	3.75	3.08	1469.
210	4.01	33.89	208	26.93	115.3	3.87	3.33	1469.
220	3.96	33.93	218	26.96	112.2	3.98	3.56	1469.
230	3.92	33.88	228	26.93	115.4	4.10	3.84	1469.
240	3.90	33.89	238	26.93	114.9	4.21	4.11	1469.
250	3.87	33.89	248	26.94	114.0	4.33	4.40	1469.
260	3.90	33.92	258	26.96	112.7	4.44	4.69	1469.
270	3.88	33.91	268	26.96	112.8	4.55	5.00	1469.
280	3.85	33.93	278	26.97	111.5	4.66	5.31	1469.
290	3.85	33.95	288	26.99	110.2	4.77	5.63	1470.
300	3.85	33.96	298	27.00	109.3	4.88	5.96	1470.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6- 79

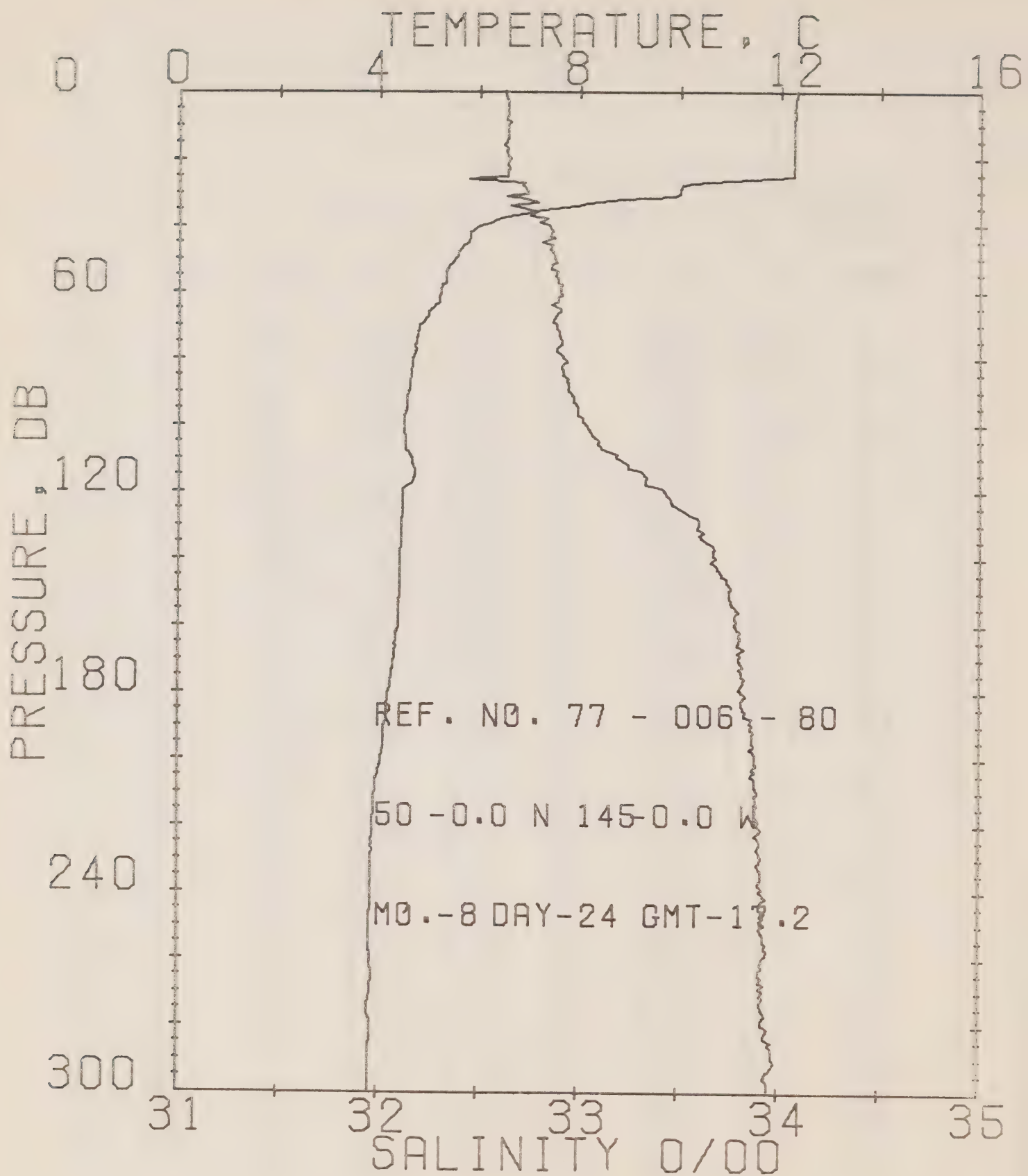
DATE 24/ 8/77

POSITION 50- .0N, 145- .0W

GMT 14.9

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.20	32.04	0	24.73	322.1	.00	.00	1495.
5	12.24	32.03	5	24.73	322.4	.16	.00	1495.
10	12.24	32.04	10	24.74	321.6	.32	.02	1495.
15	12.23	32.03	15	24.73	322.6	.48	.04	1496.
20	12.23	32.04	20	24.74	322.0	.64	.07	1496.
25	9.00	32.08	25	25.20	278.2	.80	.10	1487.
30	7.92	32.01	30	25.59	241.1	.93	.14	1480.
35	0.93	32.78	35	25.70	230.3	1.05	.18	1470.
40	6.27	32.08	40	25.87	214.4	1.16	.22	1474.
45	6.10	32.05	45	25.87	214.6	1.27	.27	1473.
50	5.55	32.07	50	25.95	207.0	1.37	.32	1471.
55	5.24	32.06	55	25.97	204.5	1.47	.37	1470.
60	5.11	32.90	60	26.02	200.1	1.57	.43	1470.
65	5.01	32.88	65	26.02	200.5	1.68	.49	1469.
70	4.83	32.89	70	26.05	197.7	1.77	.50	1469.
75	4.80	32.92	75	26.07	195.4	1.87	.64	1469.
80	4.76	32.93	80	26.09	194.0	1.97	.71	1469.
90	4.73	32.95	89	26.11	191.9	2.16	.80	1469.
100	4.59	33.00	99	26.16	187.6	2.35	1.00	1468.
110	4.41	33.12	109	26.28	176.3	2.53	1.20	1468.
120	4.43	33.35	119	26.45	159.6	2.70	1.45	1468.
130	4.56	33.03	129	26.66	139.8	2.85	1.64	1469.
140	4.51	33.72	139	26.74	132.9	2.90	1.80	1470.
150	4.45	33.79	149	26.80	126.9	3.12	2.02	1470.
160	4.36	33.81	159	26.82	124.8	3.24	2.22	1469.
170	4.28	33.01	169	26.83	123.9	3.37	2.40	1469.
180	4.15	33.04	179	26.87	120.6	3.40	2.65	1469.
190	4.08	33.04	189	26.88	120.0	3.61	2.87	1469.
200	4.04	33.06	199	26.89	118.3	3.73	3.11	1469.
210	4.04	33.05	208	26.89	118.5	3.85	3.30	1469.
220	4.00	33.05	218	26.90	118.2	3.96	3.52	1469.
230	3.95	33.08	228	26.93	115.5	4.08	3.69	1469.
240	3.89	33.88	238	26.93	115.1	4.20	4.10	1469.
250	3.84	33.09	248	26.94	114.1	4.31	4.40	1469.
260	3.82	33.90	258	26.96	112.9	4.42	4.74	1469.
270	3.81	33.92	268	26.97	111.6	4.54	5.05	1469.
280	3.81	33.93	270	26.97	111.4	4.65	5.30	1469.
290	3.81	33.95	280	26.99	109.7	4.76	5.60	1469.
300	3.81	33.96	298	27.00	109.2	4.87	6.01	1470.





## OFFSHORE OCEANOGRAPHY GROUP

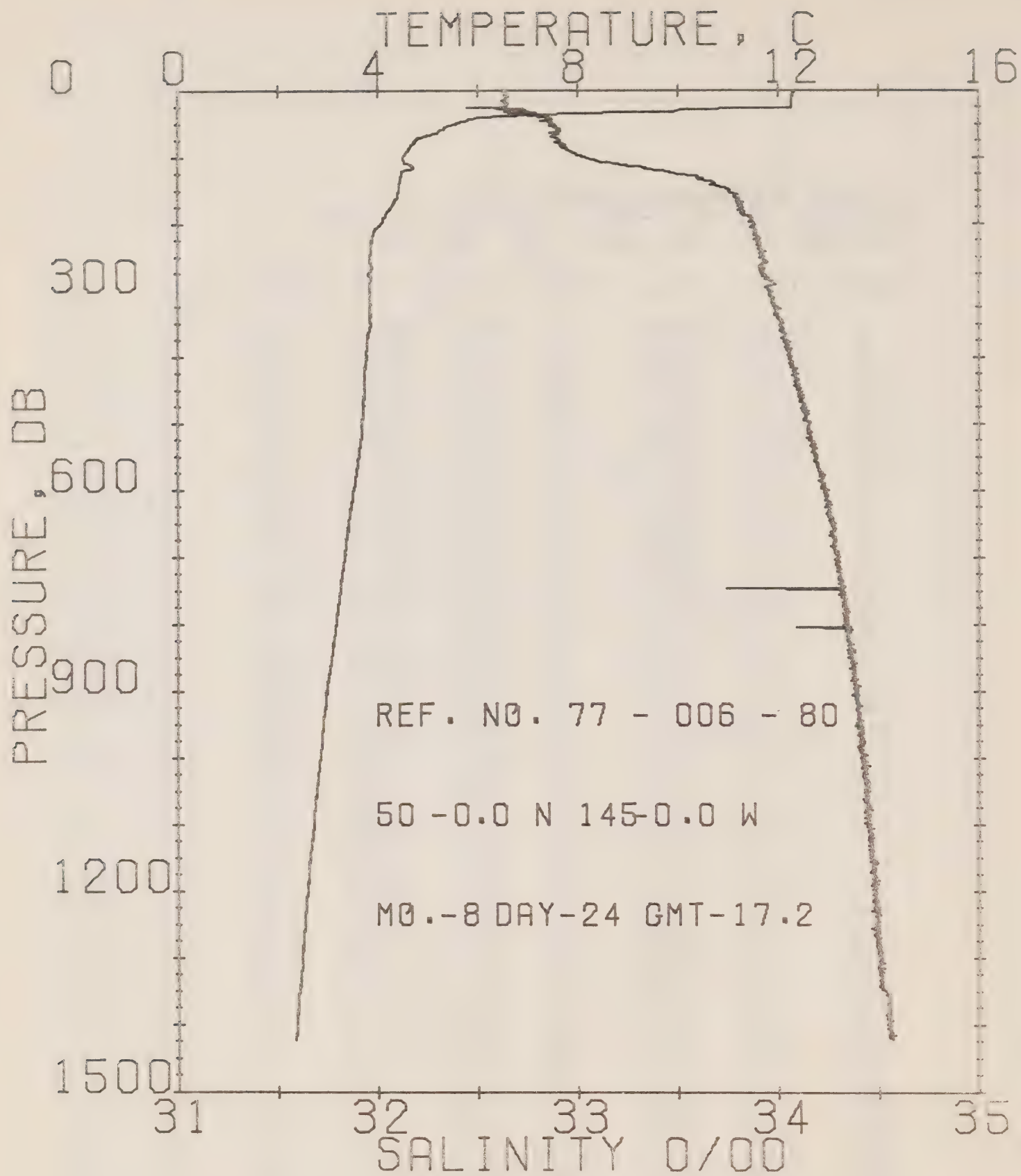
REFERENCE NO. 77- 6- 80

DATE 24/ 8/77

POSITION 50- .0N, 145- .0W

GMT 17.2

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.31	32.62	0	24.71	324.1	.00	.00	1496.
5	12.28	32.64	5	24.73	322.5	.16	.00	1496.
10	12.27	32.64	10	24.73	322.6	.32	.02	1496.
15	12.27	32.64	15	24.73	323.0	.48	.04	1496.
20	12.26	32.65	20	24.74	322.0	.65	.07	1496.
25	12.26	32.64	25	24.73	322.8	.81	.10	1496.
30	9.99	32.74	30	25.21	277.1	.95	.14	1488.
35	7.31	32.73	35	25.62	238.4	1.08	.19	1478.
40	6.02	32.84	40	25.87	214.1	1.20	.23	1473.
45	5.77	32.82	45	25.89	212.9	1.30	.28	1472.
50	5.52	32.87	50	25.95	206.4	1.41	.33	1471.
55	5.34	32.88	55	25.98	203.7	1.51	.38	1470.
60	5.22	32.91	60	26.02	200.4	1.61	.44	1470.
65	5.05	32.91	65	26.04	198.9	1.71	.50	1469.
70	4.82	32.89	70	26.04	198.0	1.81	.57	1469.
75	4.75	32.91	75	26.07	195.4	1.91	.64	1468.
80	4.67	32.92	80	26.09	193.9	2.01	.72	1468.
90	4.58	32.95	89	26.12	191.1	2.20	.89	1468.
100	4.50	33.03	99	26.19	184.2	2.39	1.07	1468.
110	4.67	33.19	109	26.30	174.2	2.56	1.26	1469.
120	4.47	33.43	119	26.51	154.2	2.73	1.46	1469.
130	4.46	33.60	129	26.65	141.0	2.88	1.64	1469.
140	4.43	33.69	139	26.72	134.3	3.02	1.83	1469.
150	4.43	33.75	149	26.77	129.5	3.15	2.03	1469.
160	4.39	33.78	159	26.80	127.0	3.28	2.23	1469.
170	4.31	33.80	169	26.83	124.7	3.40	2.44	1469.
180	4.20	33.82	179	26.85	122.7	3.52	2.66	1469.
190	4.11	33.87	189	26.90	118.1	3.65	2.89	1469.
200	4.05	33.88	199	26.91	116.7	3.76	3.13	1469.
210	3.93	33.89	208	26.93	114.7	3.88	3.37	1468.
220	3.90	33.89	218	26.94	114.4	3.99	3.62	1469.
230	3.87	33.91	228	26.96	112.4	4.11	3.88	1469.
240	3.86	33.91	238	26.96	112.6	4.22	4.15	1469.
250	3.84	33.93	248	26.97	111.1	4.33	4.43	1469.
260	3.87	33.92	258	26.97	111.9	4.44	4.72	1469.
270	3.86	33.93	268	26.97	111.8	4.56	5.02	1469.
280	3.86	33.92	278	26.96	112.2	4.67	5.34	1469.
290	3.84	33.97	288	27.01	108.3	4.78	5.65	1470.
300	3.84	33.95	298	26.99	110.4	4.89	5.98	1470.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6- 80

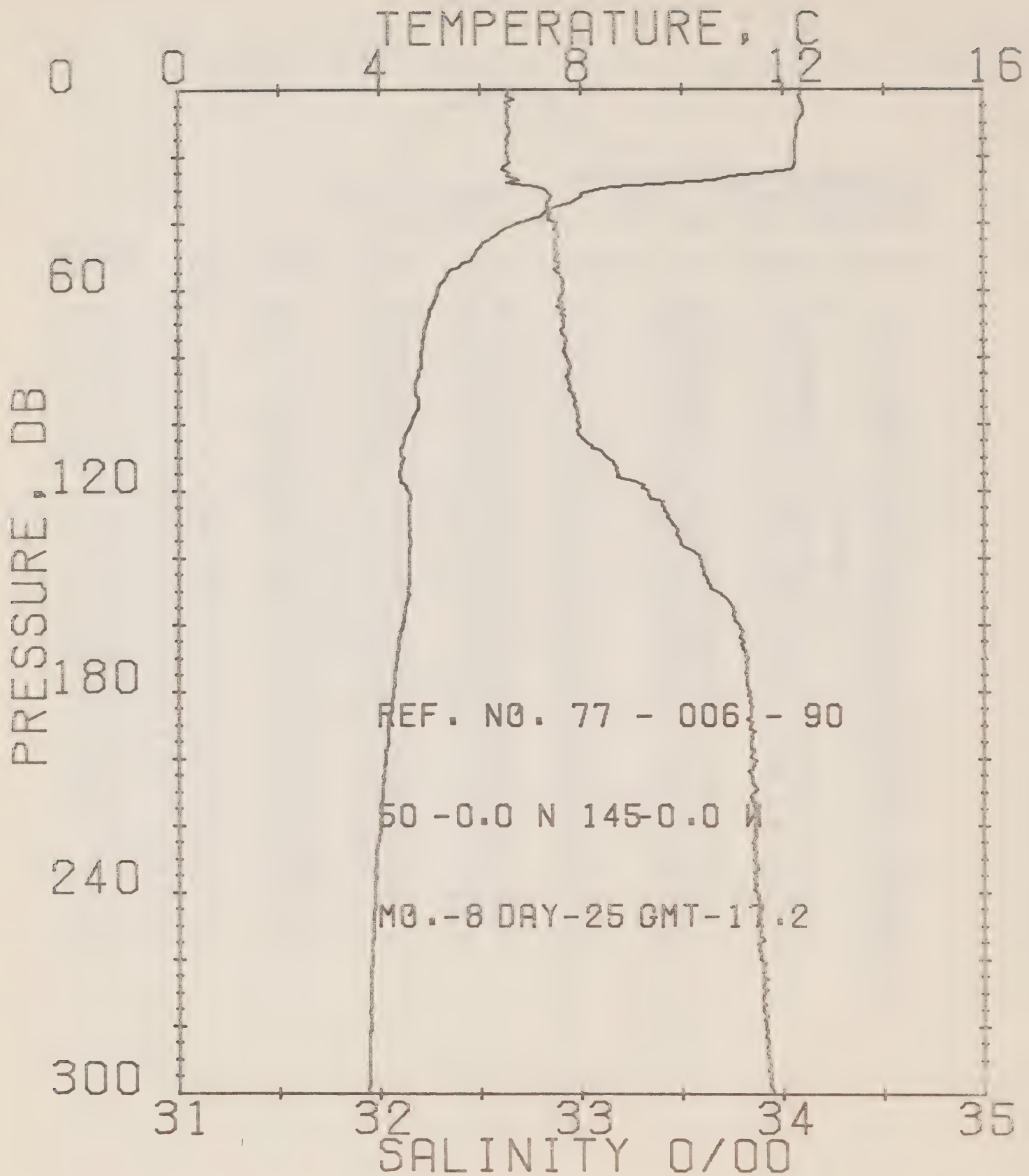
DATE 24/ 8/77

POSITION 50- .0N, 145- .0W

GMT 17.2

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.31	32.62	0	24.71	324.1	.00	.00	1496.
50	5.52	32.87	50	25.95	206.4	1.41	.33	1471.
100	4.50	33.03	99	26.19	184.2	2.39	1.07	1468.
150	4.43	33.75	149	26.77	129.5	3.15	2.03	1469.
200	4.05	33.88	199	26.91	116.7	3.76	3.13	1469.
250	3.84	33.93	248	26.97	111.1	4.33	4.43	1469.
300	3.84	33.95	298	26.99	110.4	4.89	5.98	1470.
350	3.86	34.02	347	27.05	105.1	5.43	7.77	1471.
400	3.77	34.06	397	27.09	101.7	5.95	9.75	1471.
450	3.73	34.10	446	27.12	99.1	6.45	11.92	1472.
500	3.69	34.16	496	27.17	94.3	6.93	14.26	1473.
550	3.62	34.19	545	27.20	91.5	7.40	16.77	1473.
600	3.50	34.23	595	27.25	87.8	7.85	19.40	1474.
650	3.41	34.29	644	27.30	83.0	8.28	22.15	1474.
700	3.33	34.29	694	27.31	82.2	8.70	25.02	1475.
750	3.25	34.31	743	27.33	80.5	9.10	28.03	1475.
800	3.16	34.34	793	27.37	77.4	9.50	31.13	1476.
850	3.07	34.36	842	27.39	75.1	9.88	34.36	1476.
900	2.98	34.39	891	27.42	72.8	10.25	37.65	1476.
950	2.90	34.41	941	27.45	70.4	10.61	41.04	1477.
1000	2.84	34.41	990	27.45	70.1	10.96	44.53	1478.
1050	2.77	34.45	1040	27.49	66.7	11.30	48.10	1478.
1100	2.71	34.45	1089	27.49	66.6	11.64	51.77	1479.
1150	2.64	34.45	1138	27.50	65.6	11.96	55.53	1479.
1200	2.59	34.48	1188	27.53	63.3	12.28	59.35	1480.
1250	2.53	34.48	1237	27.54	62.8	12.60	63.26	1480.
1300	2.48	34.51	1286	27.56	60.6	12.91	67.28	1481.
1350	2.42	34.54	1336	27.59	58.1	13.21	71.35	1482.
1400	2.37	34.55	1385	27.60	56.7	13.49	75.34	1482.





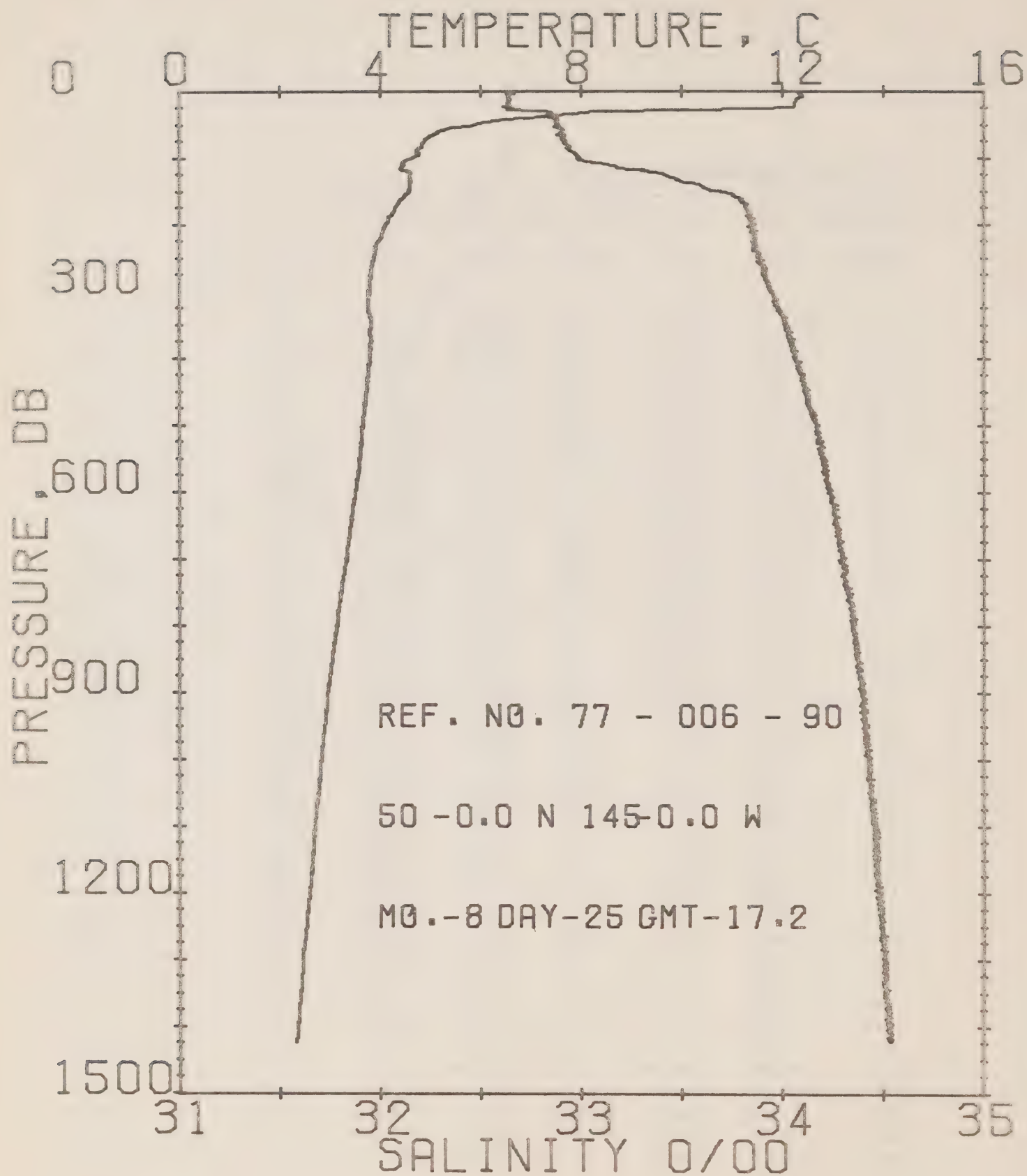
## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 17- 6- 90

DATE 25/ 8/ 77

POSITION 50- .0N, 145- .0W GMT 17.2

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.34	32.64	0	24.72	323.5	.00	.00	1496.
5	12.39	32.65	5	24.71	324.2	.16	.00	1496.
10	12.28	32.65	10	24.72	323.6	.32	.02	1496.
15	12.25	32.64	15	24.75	322.6	.49	.04	1496.
20	12.24	32.64	20	24.73	322.6	.65	.07	1496.
25	11.51	32.65	25	24.38	308.9	.81	.10	1493.
30	8.32	32.62	30	25.54	246.0	.95	.14	1482.
35	7.50	32.63	35	25.67	233.8	1.07	.16	1479.
40	6.75	32.68	40	25.81	220.6	1.18	.20	1476.
45	6.17	32.68	45	25.88	213.6	1.29	.27	1474.
50	5.66	32.68	50	25.92	209.7	1.40	.32	1475.
55	5.55	32.69	55	25.99	203.4	1.50	.36	1471.
60	5.14	32.91	60	26.03	199.4	1.60	.44	1470.
65	5.03	32.68	65	26.02	200.4	1.70	.50	1469.
70	4.93	32.92	70	26.06	196.9	1.80	.57	1469.
75	4.66	32.92	75	26.07	195.5	1.90	.64	1469.
80	4.62	32.92	80	26.08	195.2	1.99	.72	1469.
90	4.72	32.94	89	26.10	192.7	2.19	.89	1469.
100	4.62	32.99	99	26.15	188.3	2.38	1.07	1468.
110	4.47	33.13	109	26.28	176.4	2.56	1.27	1466.
120	4.58	33.33	119	26.42	162.5	2.73	1.47	1469.
130	4.60	33.45	129	26.52	153.4	2.89	1.67	1469.
140	4.58	33.59	139	26.62	143.5	3.04	1.87	1470.
150	4.57	33.57	149	26.70	136.9	3.18	2.06	1470.
160	4.44	33.78	159	26.80	127.4	3.31	2.29	1470.
170	4.34	33.62	169	26.84	123.4	3.44	2.50	1469.
180	4.27	33.63	179	26.85	122.2	3.56	2.72	1469.
190	4.16	33.64	189	26.87	120.9	3.68	2.95	1469.
200	4.11	33.65	199	26.88	119.3	3.80	3.19	1469.
210	4.05	33.66	209	26.90	118.1	3.92	3.44	1469.
220	4.01	33.66	216	26.90	117.7	4.04	3.70	1469.
230	3.92	33.66	226	26.91	117.2	4.16	3.97	1469.
240	3.89	33.67	236	26.92	116.2	4.27	4.25	1469.
250	3.86	33.69	246	26.94	114.1	4.39	4.55	1469.
260	3.84	33.69	256	26.94	114.4	4.50	4.85	1469.
270	3.80	33.91	266	26.96	112.7	4.62	5.15	1469.
280	3.80	33.91	276	26.96	112.2	4.73	5.45	1469.
290	3.79	33.93	286	26.98	110.9	4.84	5.77	1469.
300	3.77	33.95	296	27.00	109.4	4.95	6.12	1469.



## OFFSHORE OCEANOGRAPHY GROUP

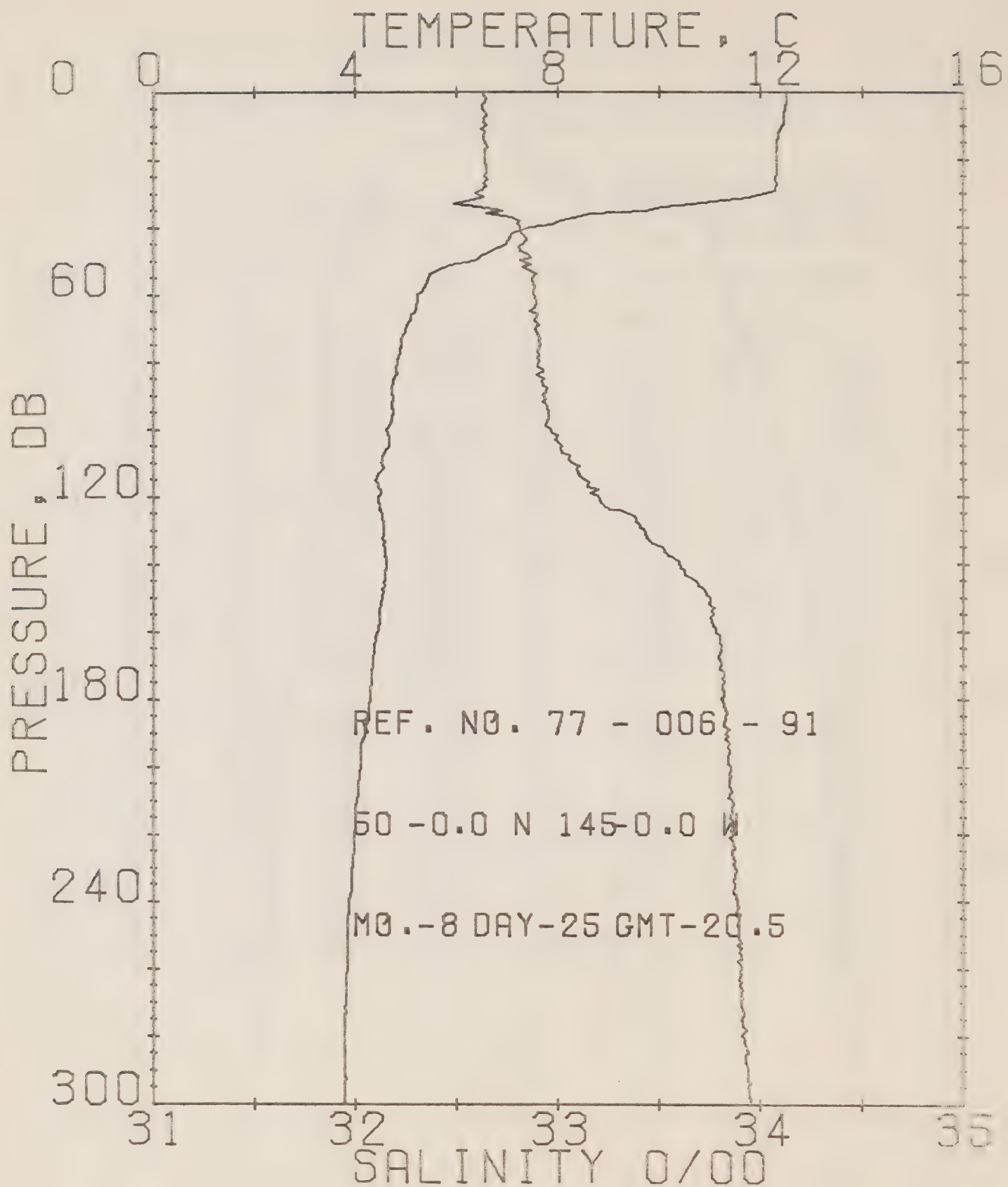
REFERENCE NO. 77- 6- 96

DATE 25/ 8/ 77

POSITION 50- .0N, 145- .0W GMT 17.2

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA J	POT. EN	SOUND
0	12.34	32.64	0	24.72	323.5	.00	.00	1490.
50	3.66	32.68	50	25.92	209.7	1.40	.32	1473.
100	4.62	32.99	99	26.15	188.3	2.38	1.07	1468.
150	4.57	33.07	149	26.70	136.9	3.18	2.08	1470.
200	4.11	33.65	199	26.86	119.3	3.80	3.19	1469.
250	3.86	33.69	246	26.94	114.1	4.39	4.55	1469.
300	3.77	33.95	296	27.00	109.4	4.95	6.11	1469.
350	3.81	34.01	347	27.04	105.7	5.40	7.88	1470.
400	3.79	34.07	397	27.09	101.4	6.00	9.86	1471.
450	3.71	34.12	446	27.14	97.3	6.50	12.01	1472.
500	3.64	34.18	496	27.19	92.5	6.98	14.32	1472.
550	3.59	34.20	545	27.21	90.6	7.44	16.76	1473.
600	3.49	34.23	595	27.25	87.5	7.88	19.35	1473.
650	3.40	34.27	644	27.29	84.0	8.31	22.11	1474.
700	3.32	34.31	694	27.32	81.0	8.73	24.96	1474.
750	3.22	34.32	743	27.35	78.9	9.13	27.95	1475.
800	3.13	34.35	793	27.37	76.6	9.51	30.97	1475.
850	3.03	34.37	842	27.40	74.4	9.89	34.13	1475.
900	2.94	34.40	891	27.44	71.1	10.25	37.36	1476.
950	2.69	34.41	941	27.45	70.5	10.61	40.72	1477.
1000	2.62	34.43	990	27.47	68.6	10.95	44.17	1477.
1050	2.76	34.44	1040	27.48	67.5	11.29	47.72	1478.
1100	2.69	34.47	1089	27.51	65.0	11.63	51.36	1479.
1150	2.65	34.46	1138	27.51	65.1	11.95	55.06	1479.
1200	2.59	34.48	1186	27.53	63.0	12.27	58.92	1480.
1250	2.52	34.50	1237	27.55	61.5	12.58	62.81	1480.
1300	2.46	34.51	1286	27.56	60.2	12.89	66.77	1481.
1350	2.41	34.52	1336	27.56	59.2	13.19	70.81	1482.
1400	2.35	34.54	1385	27.60	57.5	13.48	74.91	1482.





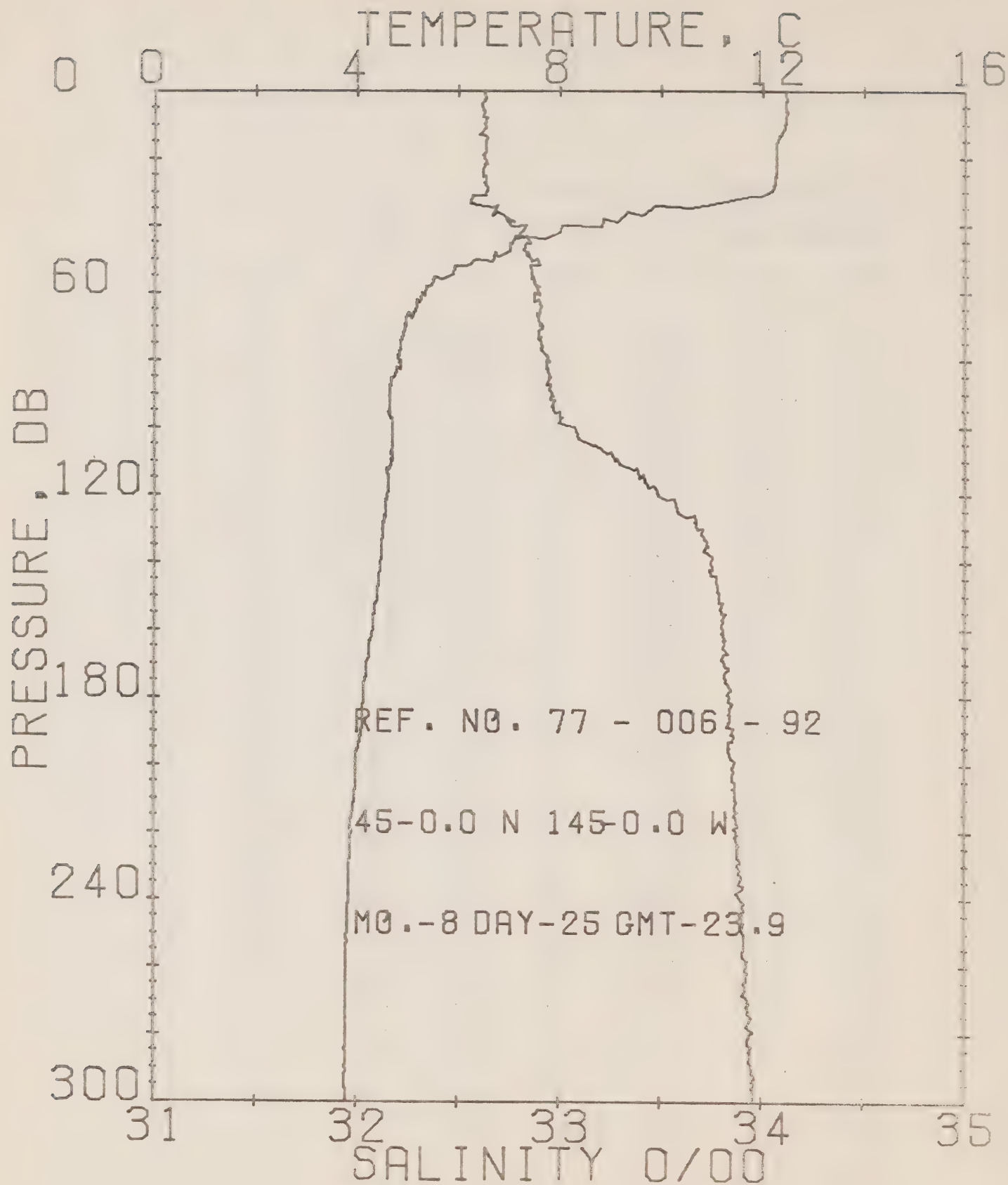
## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8- 91

DATE 25/ 8/77

POSITION 50- 00N, 145- 00W GMT 20.5

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA S	POT. EN	SOUND
0	12.51	32.84	0	24.66	327.1	.00	.00	1495.
5	12.48	32.83	5	24.68	327.0	.16	.00	1496.
10	12.43	32.84	10	24.70	325.1	.33	.02	1495.
15	12.32	32.84	15	24.72	323.5	.49	.04	1496.
20	12.32	32.84	20	24.72	323.8	.65	.07	1495.
25	12.31	32.84	25	24.72	323.4	.81	.10	1495.
30	12.06	32.59	30	24.75	322.7	.97	.15	1495.
35	9.77	32.72	35	25.25	275.0	1.13	.20	1487.
40	7.46	32.81	40	25.66	234.6	1.25	.25	1479.
45	5.97	32.83	45	25.74	226.9	1.37	.30	1477.
50	5.55	32.81	50	25.81	220.6	1.48	.35	1474.
55	5.45	32.87	55	25.96	205.7	1.58	.41	1471.
60	5.23	32.88	60	25.99	202.6	1.68	.47	1470.
65	5.17	32.88	65	25.99	203.5	1.78	.55	1470.
70	4.99	32.89	70	26.05	199.3	1.89	.60	1469.
75	4.90	32.91	75	26.06	196.6	1.98	.67	1469.
80	4.82	32.90	80	26.06	196.6	2.08	.75	1469.
90	4.73	32.93	89	26.09	193.9	2.29	.92	1465.
100	4.62	32.95	99	26.12	191.0	2.47	1.11	1465.
110	4.51	33.07	109	26.22	181.6	2.66	1.39	1468.
120	4.45	33.20	119	26.35	171.4	2.83	1.51	1468.
130	4.36	33.42	129	26.58	155.4	3.00	1.72	1469.
140	4.31	33.60	139	26.65	142.9	3.15	1.93	1475.
150	4.32	33.75	149	26.70	130.7	3.28	2.15	1475.
160	4.44	33.78	159	26.80	127.5	3.41	2.35	1476.
170	4.55	33.80	169	26.82	125.1	3.54	2.54	1469.
180	4.29	33.81	179	26.85	124.3	3.66	2.75	1469.
190	4.19	33.83	189	26.86	121.4	3.78	3.00	1469.
200	4.10	33.85	199	26.88	119.3	3.90	3.25	1469.
210	4.02	33.86	209	26.90	118.0	4.02	3.45	1469.
220	3.98	33.87	218	26.91	116.7	4.14	3.74	1469.
230	3.93	33.87	228	26.92	116.3	4.26	4.01	1469.
240	3.88	33.89	238	26.94	114.5	4.37	4.25	1469.
250	3.84	33.90	248	26.95	113.7	4.49	4.57	1469.
260	3.83	33.91	258	26.96	112.9	4.60	4.87	1469.
270	3.80	33.96	268	26.96	112.8	4.71	5.17	1469.
280	3.80	33.91	278	26.96	112.7	4.83	5.45	1469.
290	3.79	33.94	288	26.99	110.8	4.94	5.81	1469.
300	3.78	33.96	298	27.00	108.9	5.05	6.14	1469.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 17- 6- 92

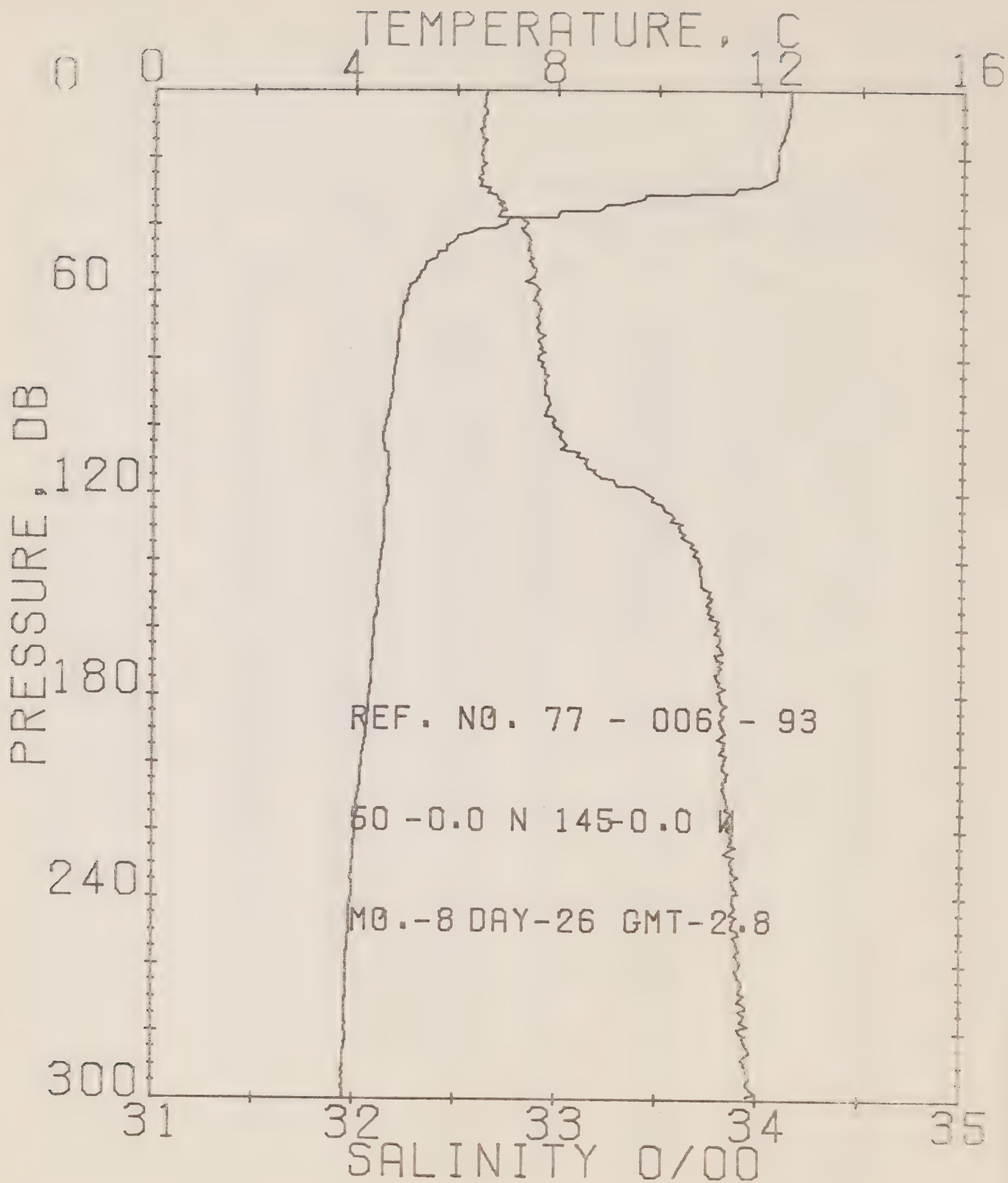
DATE 25/ 8/ 77

POSITION 46- 00N, 145- 00W

GMT 23.9

PRESS	TEMP	SAL	DEPTH	SIGMA-T	SVA	DELTA	POT.	SOUND
0	12.47	32.00	0	24.68	326.7	.00	.00	1490.
5	12.46	32.02	5	24.68	327.6	.16	.00	1490.
10	12.43	32.03	10	24.69	326.4	.37	.02	1490.
15	12.28	32.03	15	24.72	323.4	.49	.04	1490.
20	12.27	32.03	20	24.72	323.8	.65	.07	1490.
25	12.26	32.02	25	24.72	324.0	.81	.10	1490.
30	12.15	32.04	30	24.75	321.1	.97	.15	1490.
35	9.00	32.06	35	25.20	278.1	1.13	.20	1487.
40	0.03	32.70	40	25.41	257.8	1.26	.25	1484.
45	7.00	32.03	45	25.74	226.6	1.39	.30	1477.
50	0.07	32.03	50	25.80	221.5	1.49	.35	1473.
55	0.79	32.06	55	25.91	210.5	1.60	.41	1472.
60	0.55	32.09	60	25.99	203.1	1.70	.47	1471.
65	0.15	32.90	65	26.02	200.3	1.80	.54	1470.
70	4.94	32.91	70	26.05	197.5	1.90	.61	1469.
75	4.65	32.91	75	26.06	196.8	2.00	.66	1468.
80	4.62	32.94	80	26.09	193.8	2.10	.70	1469.
90	4.64	32.96	89	26.12	190.8	2.29	.82	1469.
100	4.70	33.06	99	26.15	184.1	2.49	1.11	1469.
110	4.66	33.29	109	26.38	166.5	2.66	1.36	1469.
120	4.59	33.49	119	26.55	150.9	2.82	1.46	1469.
130	4.51	33.63	129	26.70	135.9	2.96	1.60	1469.
140	4.45	33.75	139	26.77	130.0	3.00	1.69	1469.
150	4.39	33.79	149	26.80	126.6	3.22	2.00	1469.
160	4.31	33.80	159	26.83	124.4	3.34	2.25	1469.
170	4.19	33.81	169	26.85	122.8	3.47	2.45	1469.
180	4.12	33.84	179	26.87	120.5	3.50	2.60	1469.
190	4.03	33.85	189	26.89	119.0	3.71	2.66	1469.
200	3.97	33.86	199	26.91	117.3	3.83	3.14	1469.
210	3.94	33.87	209	26.91	116.4	3.95	3.35	1469.
220	3.88	33.87	219	26.92	115.7	4.06	3.66	1469.
230	3.85	33.88	226	26.95	114.9	4.18	3.88	1469.
240	3.83	33.89	238	26.95	113.5	4.26	4.16	1469.
250	3.80	33.91	245	26.96	112.2	4.40	4.40	1469.
260	3.79	33.93	256	26.98	110.8	4.51	4.72	1469.
270	3.73	33.93	260	26.96	110.4	4.62	5.00	1469.
280	3.78	33.95	270	26.99	109.4	4.74	5.35	1469.
290	3.77	33.95	286	27.00	108.9	4.84	5.55	1469.
300	3.78	33.97	296	27.01	108.1	4.95	5.96	1469.





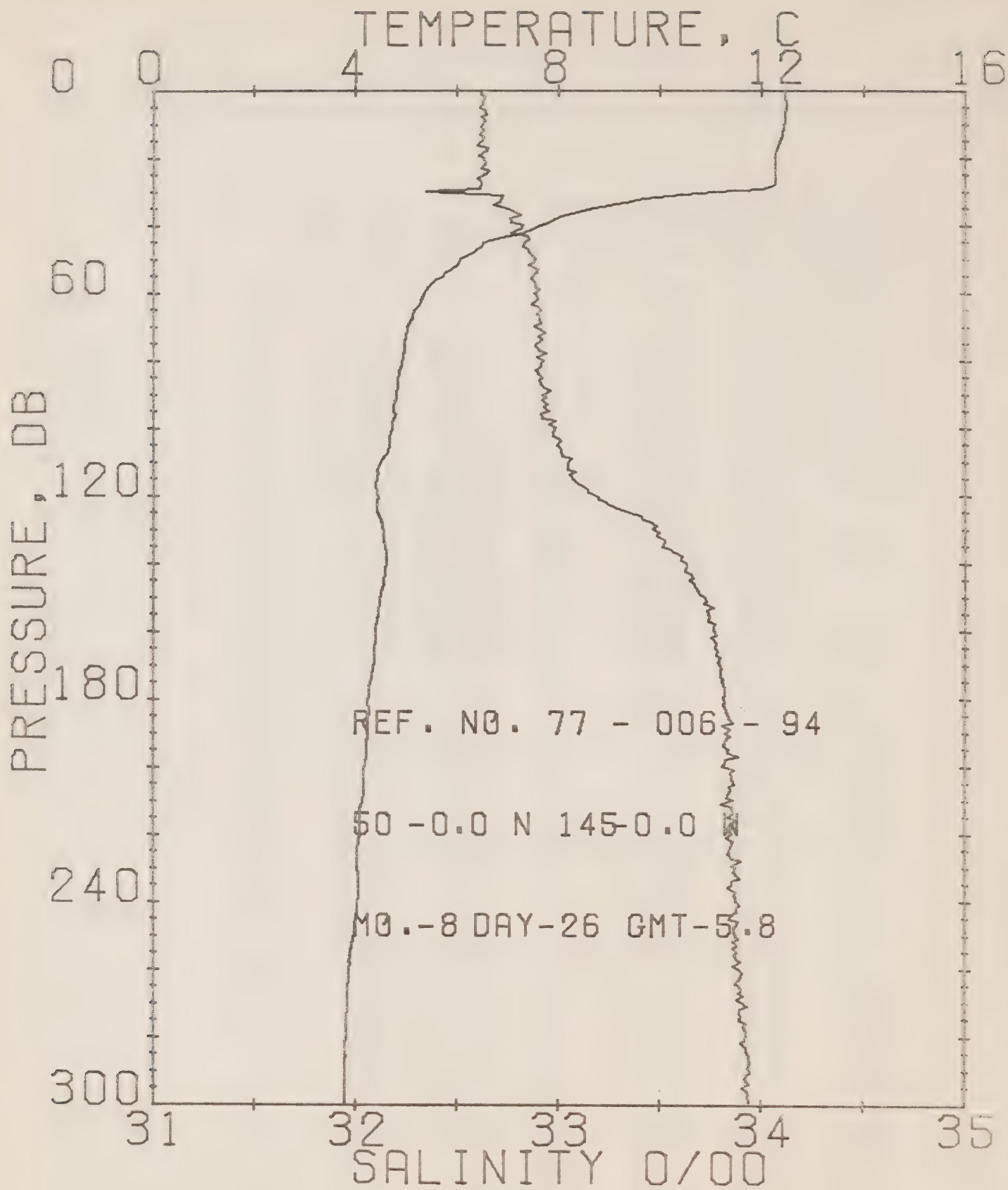
## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 17- 5- 93

DATE 26/ 8/ 77

POSITION 50- 00N, 145- 00W GMT 2.6

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA J	POT. 2m	SOUND
0	12.59	32.65	0	24.66	327.5	.00	.66	1497.
5	12.57	32.64	5	24.67	328.3	.16	.66	1497.
10	12.55	32.63	10	24.67	328.1	.33	.66	1496.
15	12.40	32.65	15	24.71	324.6	.49	.64	1496.
20	12.55	32.63	20	24.71	325.1	.65	.67	1496.
25	12.55	32.63	25	24.71	325.0	.82	.16	1495.
30	11.51	32.66	30	24.59	308.2	.98	.15	1495.
35	8.89	32.73	35	25.36	260.9	1.11	.19	1484.
40	8.94	32.65	40	25.76	225.1	1.24	.24	1477.
45	5.92	32.66	45	25.90	211.5	1.34	.29	1475.
50	5.56	32.67	50	25.95	207.2	1.45	.34	1471.
55	5.27	32.69	55	25.99	202.6	1.55	.39	1470.
60	5.03	32.91	60	26.04	198.6	1.65	.45	1469.
65	4.93	32.92	65	26.06	196.5	1.75	.52	1469.
70	4.68	32.91	70	26.06	196.7	1.85	.56	1469.
75	4.64	32.91	75	26.06	196.7	1.95	.66	1469.
80	4.61	32.91	80	26.06	196.5	2.05	.75	1469.
90	4.73	32.94	89	26.10	193.1	2.24	.96	1469.
100	4.60	32.96	99	26.15	188.5	2.43	1.09	1469.
110	4.67	33.15	109	26.27	176.9	2.61	1.26	1469.
120	4.66	33.44	119	26.56	155.1	2.79	1.46	1469.
130	4.58	33.61	129	26.64	141.7	2.93	1.67	1470.
140	4.52	33.71	139	26.75	133.7	3.07	1.86	1470.
150	4.45	33.76	149	26.78	129.1	3.20	2.05	1470.
160	4.39	33.80	159	26.82	125.4	3.33	2.24	1469.
170	4.36	33.62	169	26.84	123.9	3.46	2.47	1470.
180	4.29	33.62	179	26.84	123.7	3.59	2.69	1469.
190	4.23	33.65	189	26.85	122.2	3.70	2.92	1469.
200	4.15	33.65	199	26.87	121.0	3.82	3.16	1469.
210	4.08	33.64	209	26.88	120.1	3.94	3.41	1469.
220	4.03	33.65	216	26.89	118.9	4.06	3.67	1469.
230	3.97	33.67	226	26.91	116.8	4.19	3.94	1469.
240	3.95	33.68	235	26.92	116.0	4.30	4.22	1469.
250	3.91	33.90	246	26.94	114.3	4.41	4.51	1469.
260	3.86	33.92	255	26.96	112.2	4.53	4.80	1469.
270	3.85	33.93	266	26.97	111.4	4.64	5.11	1469.
280	3.85	33.92	276	26.96	112.4	4.75	5.42	1469.
290	3.80	33.94	286	26.99	110.2	4.86	5.74	1469.
300	3.62	33.97	296	27.01	108.5	4.97	6.07	1470.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6- 94

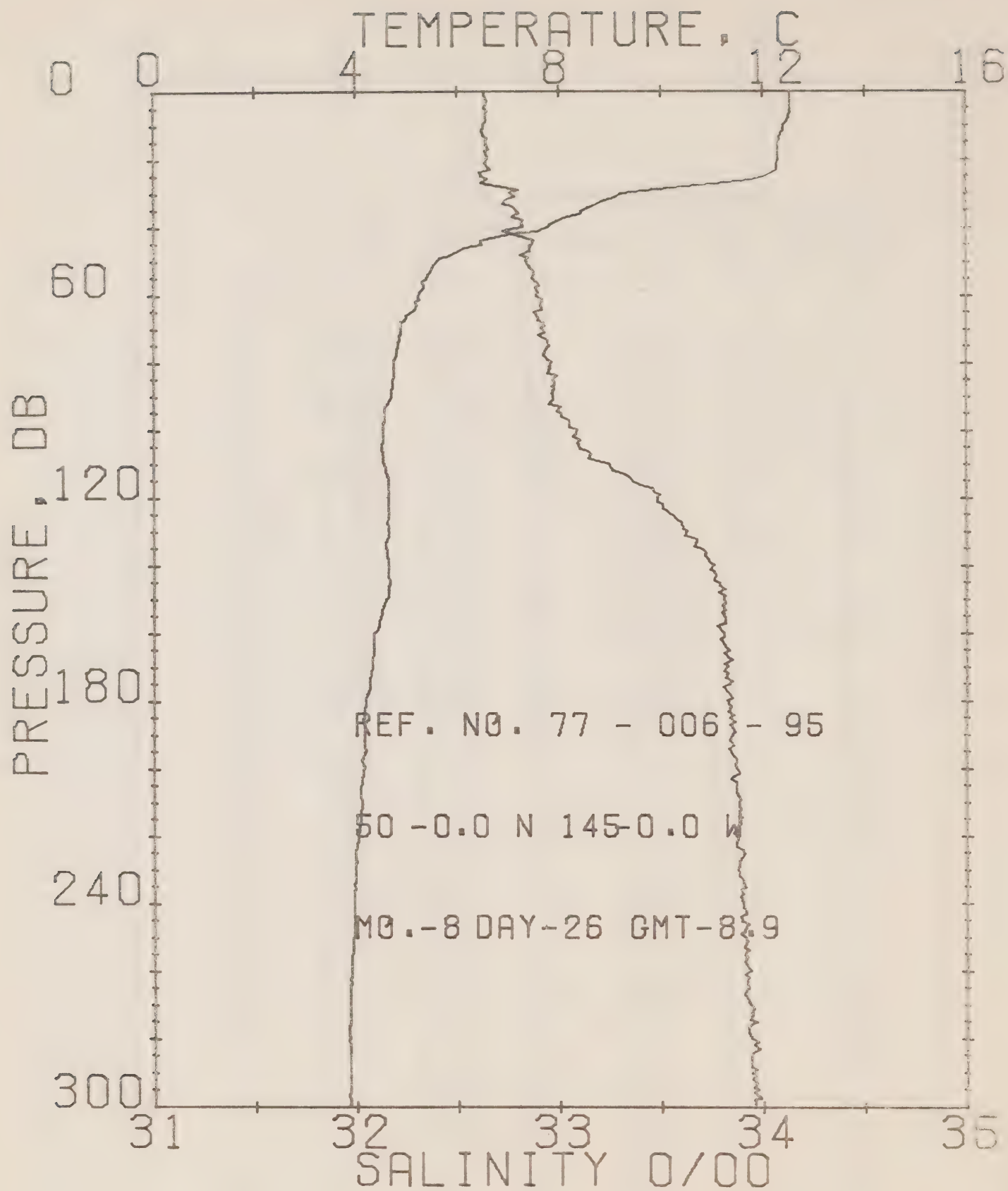
DATE 26/ 8/ 77

POSITION 50- 00N, 145- 00W

GMT 5.8

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.46	32.62	0	24.68	327.2	.00	.00	1496.
5	12.47	32.61	5	24.67	328.0	.16	.00	1496.
10	12.44	32.63	10	24.69	326.5	.33	.02	1496.
15	12.34	32.62	15	24.70	325.3	.49	.04	1496.
20	12.28	32.62	20	24.72	324.0	.65	.07	1496.
25	12.26	32.64	25	24.73	322.9	.81	.10	1496.
30	11.13	32.66	30	24.72	323.5	.98	.15	1492.
35	8.59	32.74	35	25.44	255.6	1.11	.19	1483.
40	7.63	32.82	40	25.64	236.1	1.24	.24	1479.
45	6.54	32.84	45	25.80	221.0	1.35	.29	1475.
50	6.06	32.89	50	25.90	211.3	1.46	.34	1473.
55	5.70	32.87	55	25.93	208.4	1.56	.40	1472.
60	5.55	32.89	60	25.99	203.5	1.67	.46	1471.
65	5.16	32.91	65	26.03	199.4	1.77	.52	1470.
70	5.02	32.89	70	26.02	199.9	1.87	.59	1469.
75	4.97	32.90	75	26.04	198.5	1.97	.67	1469.
80	4.92	32.92	80	26.06	196.6	2.07	.74	1469.
90	4.80	32.93	89	26.08	194.4	2.26	.91	1469.
100	4.72	32.98	99	26.13	190.0	2.46	1.16	1469.
110	4.49	33.03	109	26.21	182.4	2.64	1.30	1468.
120	4.44	33.19	119	26.32	171.9	2.82	1.51	1468.
130	4.55	33.47	129	26.54	151.9	2.99	1.72	1469.
140	4.61	33.63	139	26.66	140.6	3.13	1.92	1470.
150	4.49	33.72	149	26.74	133.0	3.27	2.12	1470.
160	4.40	33.77	159	26.79	128.4	3.40	2.30	1469.
170	4.35	33.79	169	26.81	126.0	3.52	2.54	1469.
180	4.25	33.81	179	26.84	123.5	3.65	2.70	1469.
190	4.24	33.83	189	26.85	122.5	3.77	2.99	1469.
200	4.17	33.81	199	26.84	123.2	3.89	3.20	1469.
210	4.13	33.86	209	26.89	119.3	4.01	3.49	1469.
220	4.08	33.85	218	26.89	119.1	4.13	3.75	1469.
230	4.04	33.87	228	26.91	117.6	4.25	4.02	1469.
240	4.03	33.88	238	26.91	117.0	4.37	4.30	1469.
250	3.95	33.87	248	26.92	116.7	4.49	4.59	1469.
260	3.87	33.88	258	26.93	115.1	4.60	4.90	1469.
270	3.84	33.90	268	26.95	113.4	4.72	5.20	1469.
280	3.80	33.93	278	26.96	111.0	4.83	5.52	1469.
290	3.79	33.94	288	26.99	110.3	4.94	5.84	1469.
300	3.78	33.95	298	27.00	109.5	5.05	6.17	1469.





## OFFSHORE OCEANOGRAPHY GROUP

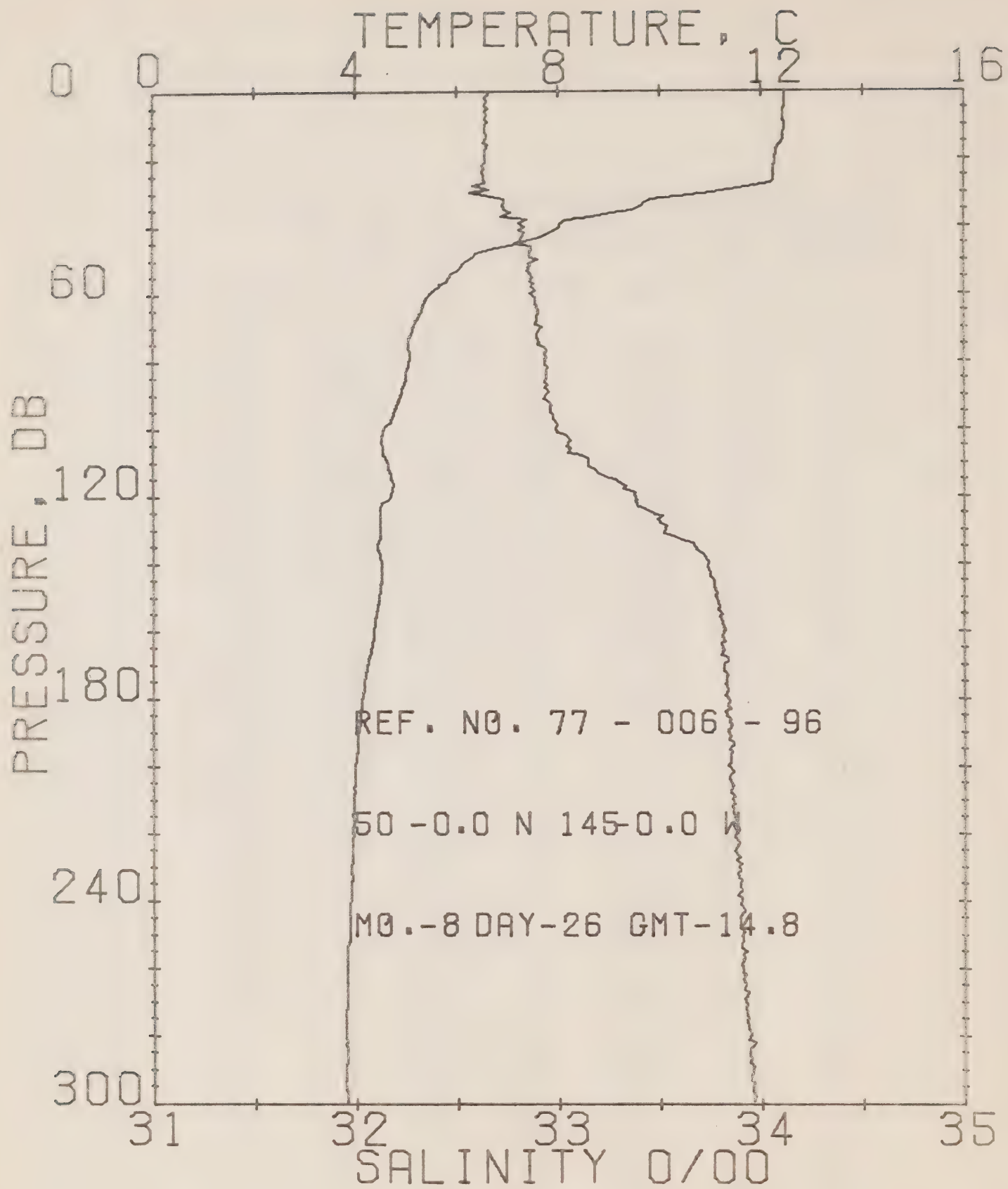
REFERENCE NO. 77- 3- 95

DATE 26/ 8/ 77

POSITION 30- 00N, 145- 00W

GMT 3.9

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.52	32.64	0	24.68	327.3	.00	.00	1496.
5	12.52	32.63	5	24.68	327.5	.16	.00	1496.
10	12.41	32.63	10	24.70	325.8	.33	.02	1496.
15	12.30	32.64	15	24.72	323.3	.49	.04	1496.
20	12.28	32.64	20	24.75	322.7	.65	.07	1496.
25	12.02	32.61	25	24.76	320.4	.81	.10	1495.
30	9.20	32.70	30	25.35	264.0	.96	.14	1485.
35	8.45	32.78	35	25.49	250.5	1.09	.18	1482.
40	7.77	32.82	40	25.62	238.3	1.21	.20	1480.
45	6.47	32.86	45	25.83	218.6	1.32	.26	1475.
50	5.51	32.84	50	25.92	210.0	1.43	.30	1471.
55	5.40	32.86	55	25.96	205.7	1.53	.35	1471.
60	5.25	32.89	60	26.00	202.3	1.64	.40	1470.
65	5.06	32.88	65	26.01	201.1	1.74	.51	1470.
70	4.88	32.91	70	26.06	196.8	1.84	.56	1469.
75	4.83	32.94	75	26.09	193.9	1.93	.60	1469.
80	4.75	32.96	80	26.11	191.9	2.03	.73	1469.
90	4.68	32.97	89	26.12	190.5	2.22	.90	1468.
100	4.54	33.08	99	26.23	180.6	2.41	1.00	1468.
110	4.56	33.24	109	26.35	169.3	2.59	1.27	1469.
120	4.64	33.49	119	26.54	151.6	2.75	1.40	1469.
130	4.63	33.63	129	26.65	140.9	2.89	1.64	1470.
140	4.65	33.76	139	26.75	131.3	3.03	1.80	1475.
150	4.60	33.81	149	26.86	127.1	3.16	2.00	1470.
160	4.56	33.86	159	26.82	125.0	3.20	2.22	1469.
170	4.51	33.83	169	26.85	122.9	3.41	2.40	1469.
180	4.19	33.82	179	26.85	122.3	3.53	2.60	1469.
190	4.16	33.85	189	26.88	120.0	3.65	2.87	1469.
200	4.15	33.87	199	26.90	118.3	3.77	3.11	1469.
210	4.11	33.88	208	26.91	117.1	3.89	3.30	1469.
220	4.02	33.87	218	26.90	117.5	4.01	3.62	1469.
230	3.97	33.87	225	26.91	116.7	4.12	3.80	1469.
240	3.95	33.96	236	26.94	114.6	4.24	4.10	1469.
250	3.93	33.90	246	26.94	114.0	4.35	4.44	1469.
260	3.89	33.94	255	26.97	111.1	4.46	4.74	1469.
270	3.87	33.95	266	26.97	111.4	4.58	5.04	1469.
280	3.85	33.94	275	26.98	110.6	4.69	5.35	1469.
290	3.86	33.95	285	26.99	110.4	4.80	5.67	1470.
300	3.87	33.96	298	27.00	109.5	4.91	6.00	1470.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8- 98

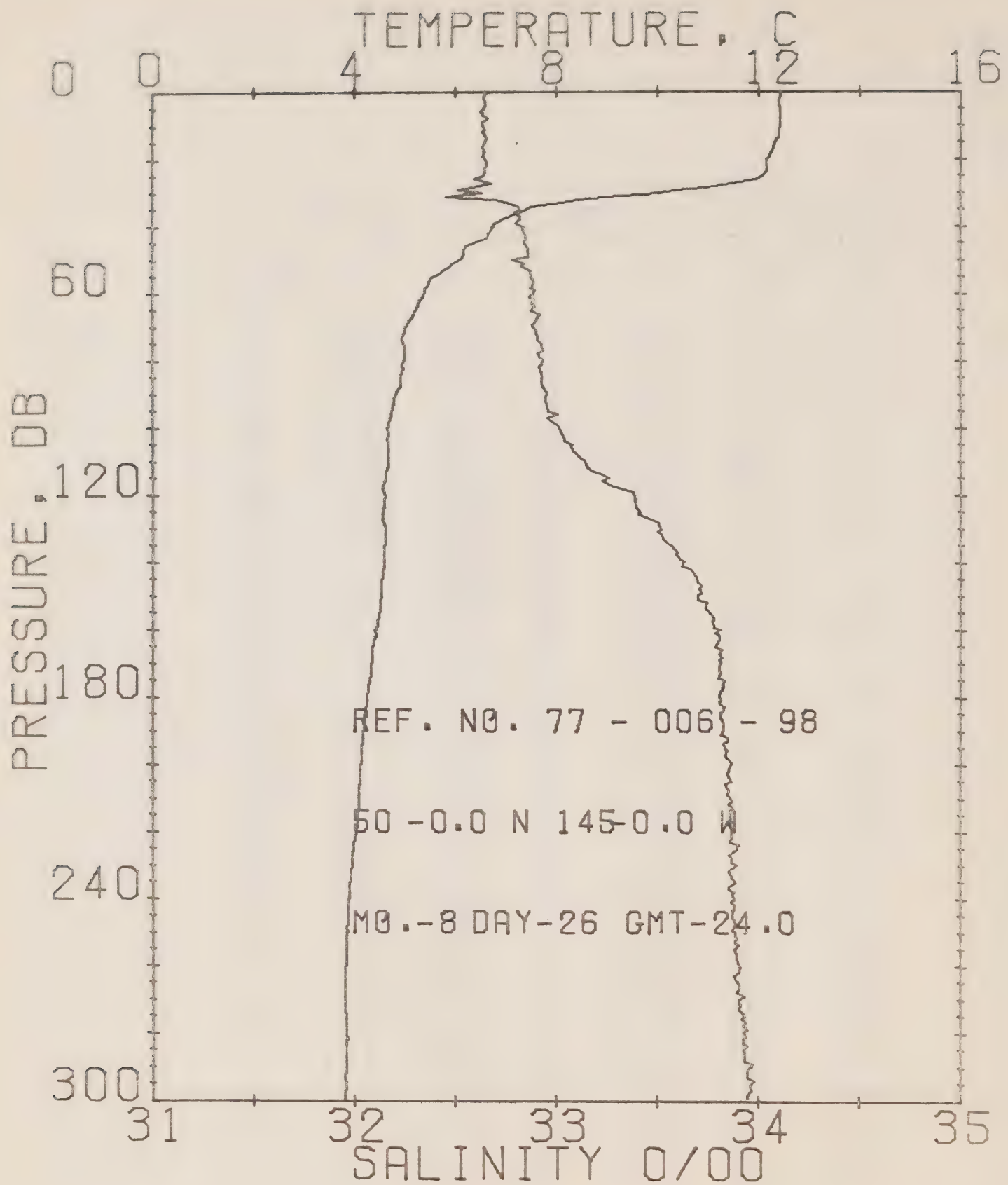
DATE 26/ 8/ 77

POSITION 50- 00N, 145- 00W

GMT 14.8

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	Pot. EN	SOUND
0	12.47	32.65	0	24.70	325.0	.00	.00	1498.
5	12.43	32.66	5	24.71	324.3	.16	.00	1498.
10	12.44	32.64	10	24.70	325.6	.33	.02	1498.
15	12.41	32.63	15	24.70	325.6	.49	.04	1498.
20	12.26	32.64	20	24.73	322.9	.65	.07	1498.
25	12.24	32.63	25	24.73	322.8	.81	.10	1498.
30	11.09	32.56	30	24.90	306.9	.97	.15	1492.
35	9.47	32.74	35	25.30	268.9	1.11	.19	1486.
40	8.62	32.83	40	25.59	241.1	1.24	.24	1481.
45	7.19	32.79	45	25.67	233.1	1.35	.29	1478.
50	6.20	32.90	50	25.89	212.4	1.46	.35	1474.
55	5.65	32.87	55	25.91	210.5	1.57	.40	1473.
60	5.40	32.86	60	25.95	206.5	1.68	.46	1471.
65	5.31	32.90	65	26.00	202.2	1.78	.50	1471.
70	5.12	32.92	70	26.04	198.8	1.88	.60	1470.
75	5.04	32.90	75	26.05	199.2	1.98	.67	1470.
80	5.05	32.93	80	26.06	196.9	2.08	.75	1470.
90	4.68	32.94	89	26.08	194.6	2.27	.92	1469.
100	4.55	32.99	99	26.10	187.5	2.46	1.11	1468.
110	4.64	33.15	109	26.27	176.7	2.65	1.30	1469.
120	4.69	33.38	119	26.45	160.2	2.81	1.50	1470.
130	4.47	33.53	129	26.59	146.6	2.97	1.69	1469.
140	4.51	33.74	139	26.75	131.3	3.10	1.88	1470.
150	4.46	33.78	149	26.79	128.2	3.23	2.07	1470.
160	4.36	33.82	159	26.85	124.1	3.36	2.27	1469.
170	4.22	33.82	169	26.85	122.7	3.48	2.46	1469.
180	4.11	33.83	179	26.87	120.7	3.61	2.70	1469.
190	4.04	33.84	189	26.88	119.7	3.73	2.92	1469.
200	3.98	33.83	199	26.88	119.3	3.84	3.10	1468.
210	3.95	33.85	209	26.90	117.5	3.96	3.41	1469.
220	3.94	33.88	218	26.92	115.8	4.08	3.60	1469.
230	3.89	33.89	228	26.94	114.5	4.19	3.90	1469.
240	3.88	33.90	238	26.95	113.8	4.31	4.19	1469.
250	3.86	33.90	248	26.95	113.3	4.42	4.40	1469.
260	3.81	33.90	253	26.96	112.9	4.53	4.70	1469.
270	3.80	33.92	260	26.97	111.6	4.65	5.00	1469.
280	3.79	33.95	270	26.99	109.6	4.76	5.39	1469.
290	3.79	33.95	280	27.00	109.6	4.87	5.71	1469.
300	3.61	33.96	295	27.00	109.3	4.98	6.04	1470.





## OFFSHORE OCEANOGRAPHY GROUP

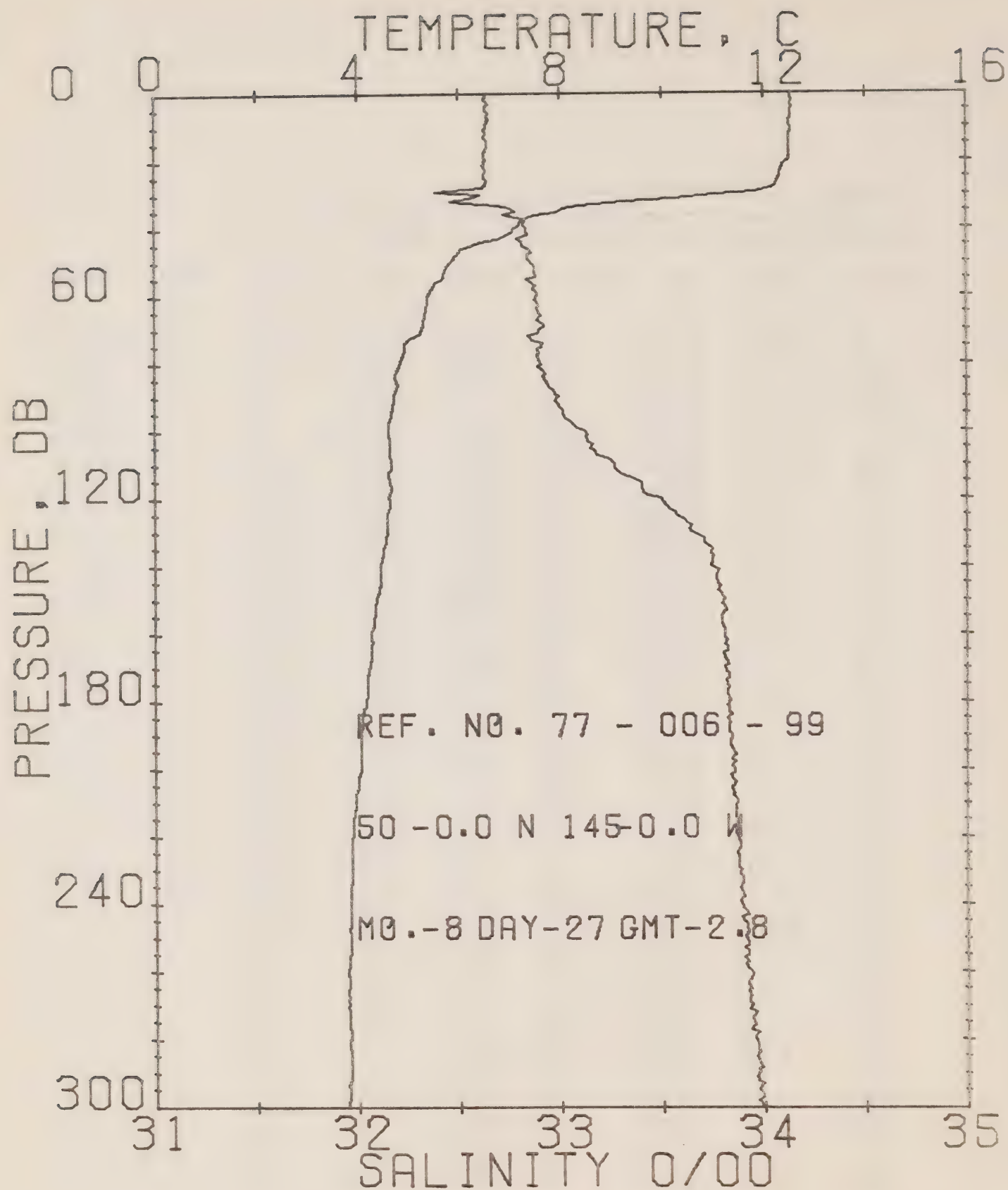
REFERENCE NO. 77- 8- 98

DATE 26/ 8/ 77

POSITION 50- 00N, 145- 00W

GMT 24.0

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.42	32.85	0	24.71	324.4	.00	.88	1496.
5	12.42	32.84	5	24.70	325.3	.16	.88	1496.
10	12.42	32.83	10	24.70	325.8	.32	.88	1496.
15	12.32	32.85	15	24.70	323.1	.40	.84	1496.
20	12.17	32.85	20	24.75	320.5	.65	.87	1495.
25	12.07	32.83	25	24.76	319.7	.81	.86	1495.
30	10.87	32.82	30	25.10	287.4	.96	.85	1488.
35	7.57	32.82	35	25.66	232.6	1.00	.85	1478.
40	5.74	32.83	40	25.77	223.9	1.20	.83	1476.
45	5.34	32.84	45	25.83	218.4	1.32	.82	1474.
50	5.06	32.78	50	25.82	219.3	1.42	.80	1473.
55	5.55	32.67	55	25.95	206.7	1.53	.89	1471.
60	5.37	32.86	60	25.98	204.0	1.63	.85	1471.
65	5.20	32.87	65	25.99	203.0	1.73	.81	1470.
70	5.00	32.88	70	26.02	200.1	1.83	.85	1469.
75	4.99	32.92	75	26.06	196.9	1.93	.86	1469.
80	4.97	32.93	80	26.06	196.3	2.03	.75	1469.
90	4.80	32.95	89	26.10	192.8	2.23	.90	1469.
100	4.85	33.01	99	26.16	186.9	2.42	1.09	1469.
110	4.67	33.14	109	26.26	177.7	2.60	1.26	1469.
120	4.60	33.38	119	26.40	159.1	2.77	1.40	1469.
130	4.61	33.51	129	26.50	149.2	2.93	1.60	1470.
140	4.59	33.65	139	26.66	140.4	3.07	1.80	1470.
150	4.52	33.71	149	26.75	134.0	3.21	2.00	1475.
160	4.41	33.81	159	26.82	125.1	3.34	2.22	1470.
170	4.33	33.81	169	26.83	124.3	3.46	2.50	1469.
180	4.24	33.80	179	26.85	124.0	3.50	2.72	1469.
190	4.17	33.83	189	26.86	121.8	3.71	2.95	1469.
200	4.12	33.80	199	26.89	118.4	3.83	3.15	1469.
210	4.09	33.80	209	26.89	118.5	3.95	3.44	1469.
220	4.02	33.87	218	26.91	117.5	4.07	3.70	1469.
230	3.94	33.89	228	26.93	115.0	4.18	3.95	1469.
240	3.88	33.88	238	26.93	115.1	4.30	4.25	1469.
250	3.85	33.88	248	26.94	114.7	4.41	4.50	1469.
260	3.82	33.91	258	26.96	112.4	4.53	4.80	1469.
270	3.81	33.91	268	26.96	112.4	4.64	5.10	1469.
280	3.85	33.93	278	26.97	111.4	4.75	5.45	1469.
290	3.84	33.97	288	27.01	108.4	4.86	5.75	1470.
300	3.83	33.97	298	27.01	108.0	4.97	6.05	1470.



## OFFSHORE OCEANOGRAPHY GROUP

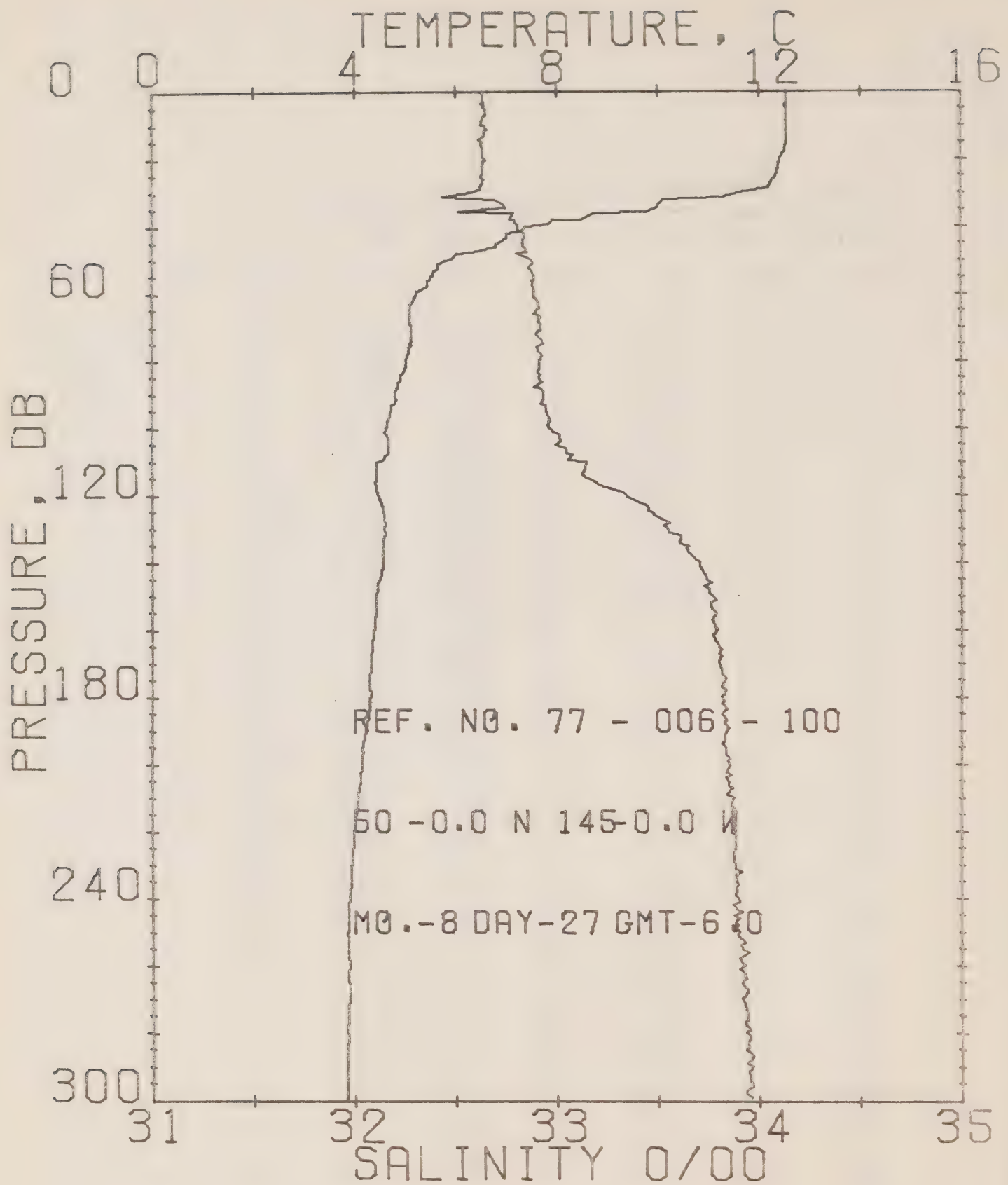
REFERENCE NO. 77- 8- 99

DATE 27/ 8/ 77

POSITION 50- .00N, 145- .00W GMT 2.8

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.53	32.83	0	24.67	327.6	.00	.00	1498.
5	12.54	32.83	5	24.67	328.0	.16	.00	1498.
10	12.52	32.84	10	24.68	327.4	.33	.02	1498.
15	12.51	32.84	15	24.68	327.0	.49	.04	1498.
20	12.47	32.85	20	24.68	327.3	.66	.07	1498.
25	12.50	32.83	25	24.71	324.5	.82	.10	1498.
30	11.16	32.57	30	24.38	308.4	.98	.15	1492.
35	7.94	32.77	35	25.56	244.0	1.12	.19	1480.
40	7.10	32.63	40	25.72	228.5	1.23	.24	1477.
45	6.22	32.61	45	25.82	218.8	1.35	.29	1474.
50	5.83	32.66	50	25.90	211.2	1.45	.34	1472.
55	5.65	32.64	55	25.91	210.5	1.56	.40	1472.
60	5.39	32.69	60	25.96	204.0	1.66	.46	1471.
65	5.33	32.69	65	25.99	203.1	1.76	.52	1471.
70	5.27	32.91	70	26.01	201.4	1.86	.58	1470.
75	4.95	32.91	75	26.05	197.5	1.96	.68	1469.
80	4.63	32.91	80	26.06	196.6	2.06	.74	1469.
90	4.71	32.99	89	26.14	189.1	2.26	.91	1469.
100	4.61	33.12	99	26.25	178.7	2.44	1.09	1469.
110	4.66	33.27	109	26.36	168.1	2.62	1.25	1469.
120	4.63	33.49	119	26.54	151.1	2.78	1.47	1469.
130	4.58	33.64	129	26.67	139.4	2.92	1.65	1470.
140	4.45	33.74	139	26.76	130.8	3.06	1.80	1469.
150	4.38	33.81	149	26.82	125.1	3.18	2.02	1469.
160	4.27	33.81	159	26.84	123.8	3.31	2.22	1469.
170	4.23	33.81	169	26.84	123.1	3.43	2.40	1469.
180	4.16	33.83	179	26.86	121.2	3.55	2.64	1469.
190	4.05	33.84	189	26.88	119.7	3.68	2.87	1469.
200	4.04	33.86	199	26.89	118.3	3.79	3.11	1469.
210	3.94	33.86	208	26.91	116.6	3.91	3.36	1469.
220	3.88	33.87	218	26.92	115.8	4.03	3.61	1468.
230	3.86	33.89	228	26.94	114.2	4.14	3.86	1469.
240	3.83	33.89	238	26.94	114.2	4.26	4.11	1469.
250	3.84	33.91	248	26.96	112.6	4.37	4.40	1469.
260	3.79	33.93	258	26.98	110.3	4.48	4.72	1469.
270	3.80	33.94	268	26.98	110.4	4.59	5.02	1469.
280	3.82	33.95	278	27.00	109.3	4.70	5.30	1469.
290	3.84	33.97	288	27.01	108.1	4.81	5.64	1470.
300	3.80	33.98	298	27.02	107.4	4.92	5.97	1470.





## OFFSHORE OCEANOGRAPHY GROUP

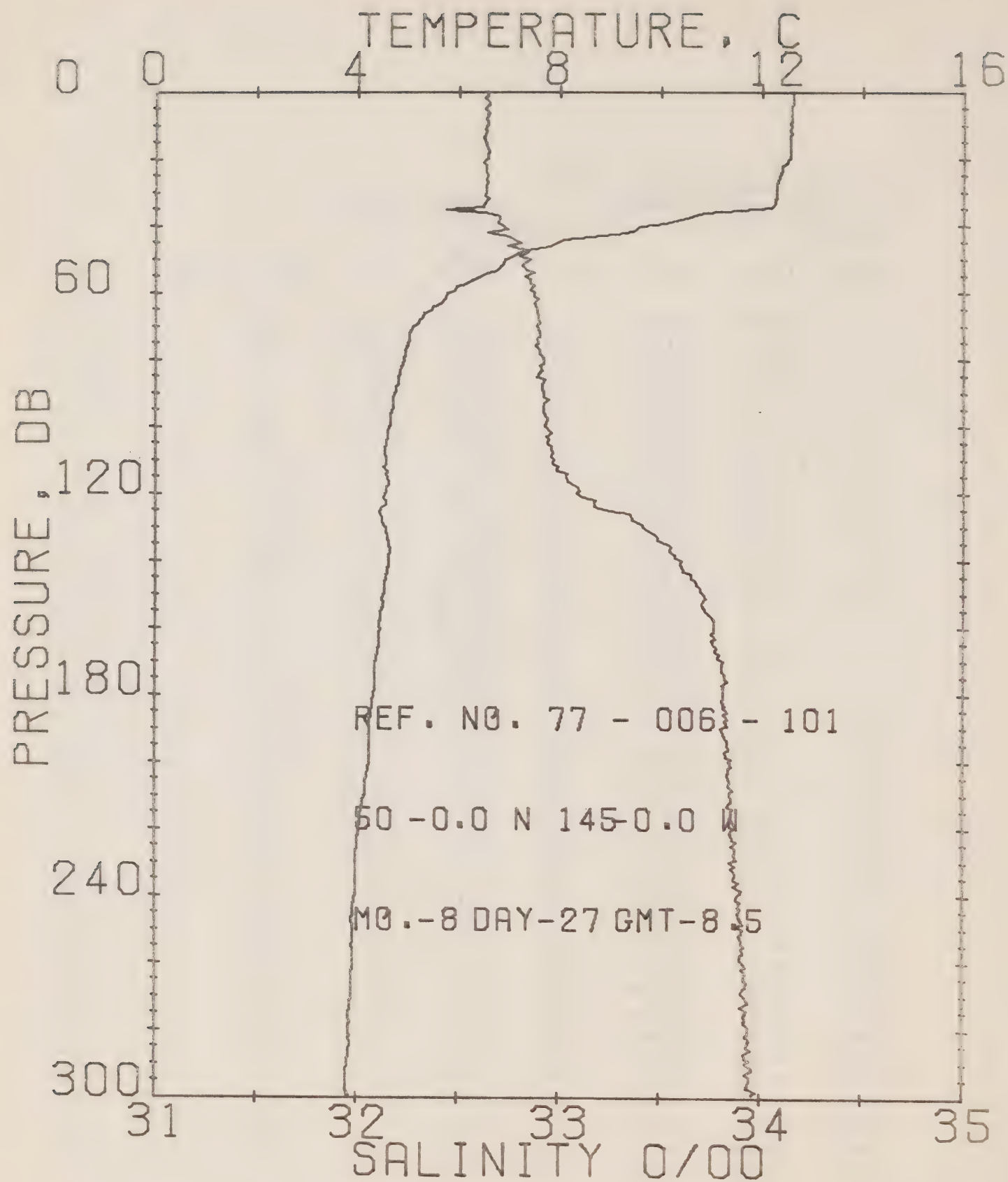
REFERENCE NO. 77- 8-100

DATE 27/ 8/77

POSITION 50- .00N, 145- .00W

GMT 6.0

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.52	32.63	0	24.68	327.5	.00	.00	1490.
5	12.52	32.63	5	24.69	326.5	.16	.00	1490.
10	12.53	32.63	10	24.66	327.7	.33	.02	1490.
15	12.53	32.63	15	24.67	328.2	.49	.04	1497.
20	12.40	32.64	20	24.70	325.4	.65	.07	1490.
25	12.32	32.63	25	24.71	324.7	.82	.10	1490.
30	11.59	32.58	30	24.81	315.1	.98	.15	1493.
35	9.89	32.50	35	25.17	281.5	1.12	.20	1480.
40	7.59	32.81	40	25.66	234.0	1.25	.25	1473.
45	6.80	32.83	45	25.76	224.7	1.37	.30	1470.
50	5.79	32.87	50	25.92	209.0	1.47	.38	1472.
55	5.52	32.89	55	25.97	205.2	1.58	.40	1471.
60	5.23	32.89	60	26.00	202.2	1.68	.40	1470.
65	5.09	32.90	65	26.03	199.6	1.78	.53	1470.
70	5.11	32.92	70	26.04	198.7	1.88	.60	1470.
75	5.11	32.93	75	26.05	198.0	1.98	.67	1470.
80	5.02	32.91	80	26.05	198.0	2.08	.75	1470.
90	4.81	32.93	89	26.09	194.4	2.28	.92	1469.
100	4.61	32.90	99	26.13	190.2	2.47	1.10	1468.
110	4.46	33.12	109	26.27	176.6	2.65	1.30	1460.
120	4.48	33.34	119	26.44	160.6	2.82	1.50	1469.
130	4.60	33.54	129	26.59	146.9	2.98	1.70	1470.
140	4.50	33.70	139	26.72	134.5	3.12	1.89	1470.
150	4.44	33.77	149	26.78	128.0	3.25	2.09	1469.
160	4.38	33.79	159	26.81	126.3	3.38	2.29	1469.
170	4.32	33.80	169	26.82	124.9	3.50	2.50	1469.
180	4.31	33.81	179	26.83	124.0	3.63	2.72	1469.
190	4.21	33.84	189	26.87	121.0	3.75	2.95	1469.
200	4.13	33.85	199	26.88	119.7	3.87	3.15	1469.
210	4.05	33.87	209	26.90	117.6	3.90	3.44	1469.
220	3.98	33.86	218	26.90	117.7	4.11	3.70	1469.
230	3.93	33.88	226	26.92	115.7	4.22	3.90	1469.
240	3.89	33.89	233	26.94	114.4	4.34	4.24	1469.
250	3.85	33.90	243	26.95	113.4	4.45	4.52	1469.
260	3.88	33.90	250	26.97	111.9	4.56	4.82	1469.
270	3.88	33.92	260	26.96	112.7	4.69	5.12	1469.
280	3.86	33.93	278	26.97	111.3	4.79	5.42	1469.
290	3.84	33.97	288	27.01	108.6	4.90	5.70	1470.
300	3.84	33.96	290	27.00	109.4	5.01	6.00	1470.



## OFFSHORE OCEANOGRAPHY GROUP

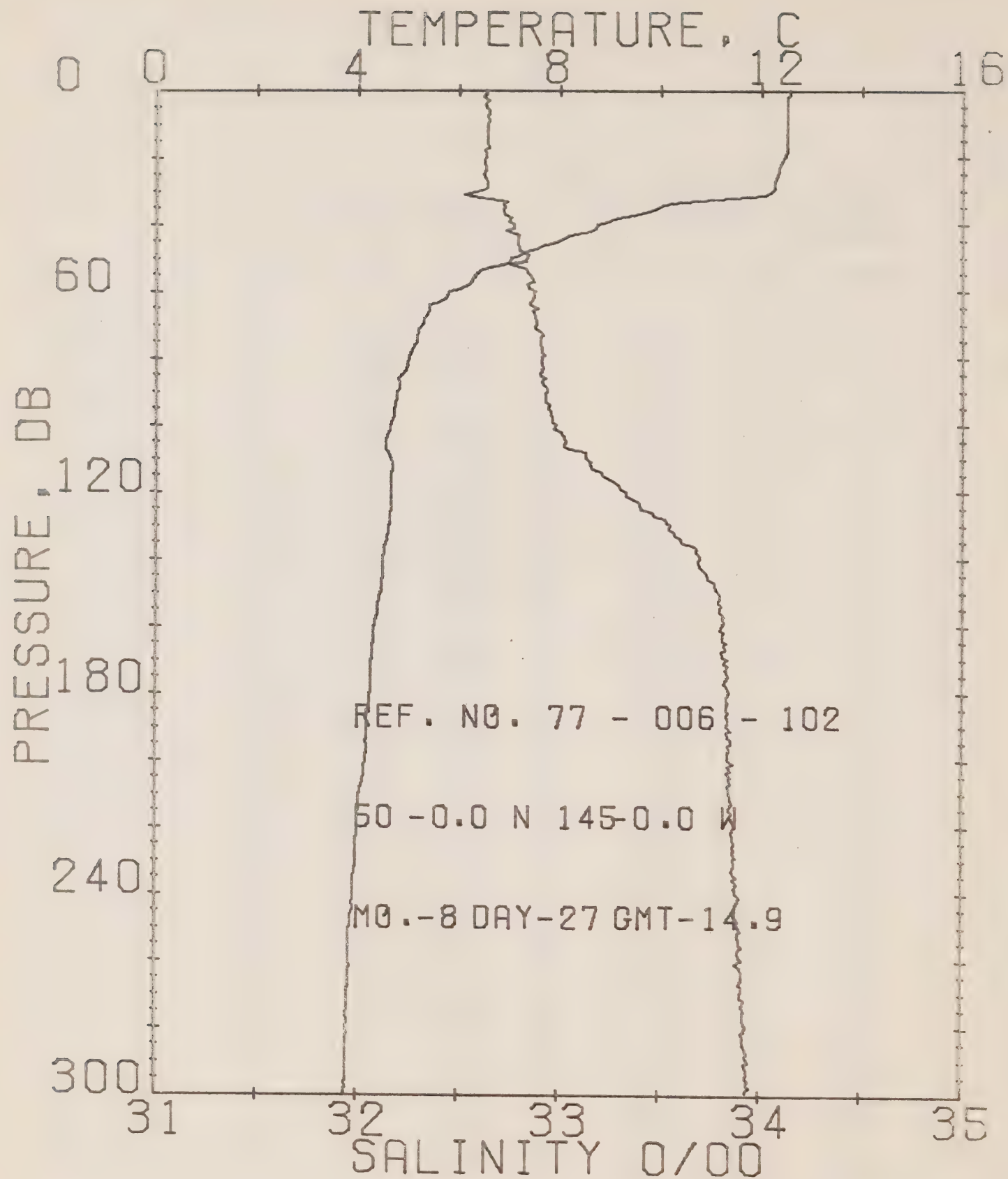
REFERENCE NO. 77- 5-101

DATE 27/ 8/77

POSITION 30- .0N, 145- .0W GMT 8.5

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. ENT	SOUND
0	12.62	32.64	0	24.66	328.9	.00	.00	1497.
5	12.59	32.63	5	24.66	329.0	.16	.00	1497.
10	12.58	32.64	10	24.67	328.3	.33	.02	1497.
15	12.57	32.63	15	24.67	328.8	.49	.04	1497.
20	12.54	32.64	20	24.68	327.6	.66	.07	1497.
25	12.54	32.64	25	24.72	324.3	.82	.10	1496.
30	12.29	32.63	30	24.72	324.0	.98	.15	1496.
35	11.70	32.47	35	24.70	325.6	1.14	.20	1494.
40	9.62	32.71	40	25.25	273.3	1.29	.26	1487.
45	7.94	32.61	45	25.59	241.7	1.42	.32	1481.
50	6.92	32.65	50	25.76	225.0	1.54	.37	1477.
55	6.41	32.63	55	25.81	220.3	1.65	.43	1475.
60	5.76	32.67	60	25.92	209.6	1.76	.49	1472.
65	5.43	32.69	65	25.96	204.4	1.86	.56	1471.
70	5.10	32.89	70	26.02	200.8	1.96	.63	1470.
75	4.99	32.89	75	26.03	199.3	2.06	.70	1469.
80	4.90	32.92	80	26.06	196.6	2.16	.78	1469.
90	4.72	32.92	89	26.08	194.4	2.36	.95	1469.
100	4.61	32.93	99	26.10	192.9	2.55	1.14	1468.
110	4.56	32.97	109	26.14	189.1	2.74	1.34	1468.
120	4.54	33.09	119	26.24	180.1	2.93	1.56	1468.
130	4.55	33.41	129	26.49	156.3	3.09	1.77	1469.
140	4.61	33.60	139	26.63	142.6	3.24	1.98	1470.
150	4.51	33.71	149	26.73	133.5	3.38	2.16	1470.
160	4.44	33.76	159	26.78	128.8	3.51	2.39	1470.
170	4.36	33.81	169	26.83	124.8	3.64	2.61	1470.
180	4.31	33.81	179	26.83	124.0	3.76	2.83	1469.
190	4.24	33.80	189	26.83	124.2	3.89	3.06	1469.
200	4.23	33.84	199	26.86	121.5	4.01	3.30	1470.
210	4.13	33.85	209	26.88	119.8	4.13	3.53	1469.
220	4.02	33.87	218	26.91	117.3	4.25	3.82	1469.
230	3.97	33.85	228	26.90	118.1	4.37	4.08	1469.
240	3.96	33.89	238	26.93	115.4	4.48	4.36	1469.
250	3.91	33.91	248	26.95	113.6	4.60	4.65	1469.
260	3.91	33.91	258	26.96	113.0	4.71	4.94	1469.
270	3.88	33.92	268	26.96	112.7	4.82	5.25	1469.
280	3.85	33.94	278	26.96	110.7	4.93	5.56	1469.
290	3.80	33.93	288	26.96	111.0	5.05	5.86	1469.
300	3.65	33.98	296	27.01	108.1	5.16	6.21	1470.





## OFFSHORE OCEANOGRAPHY GROUP

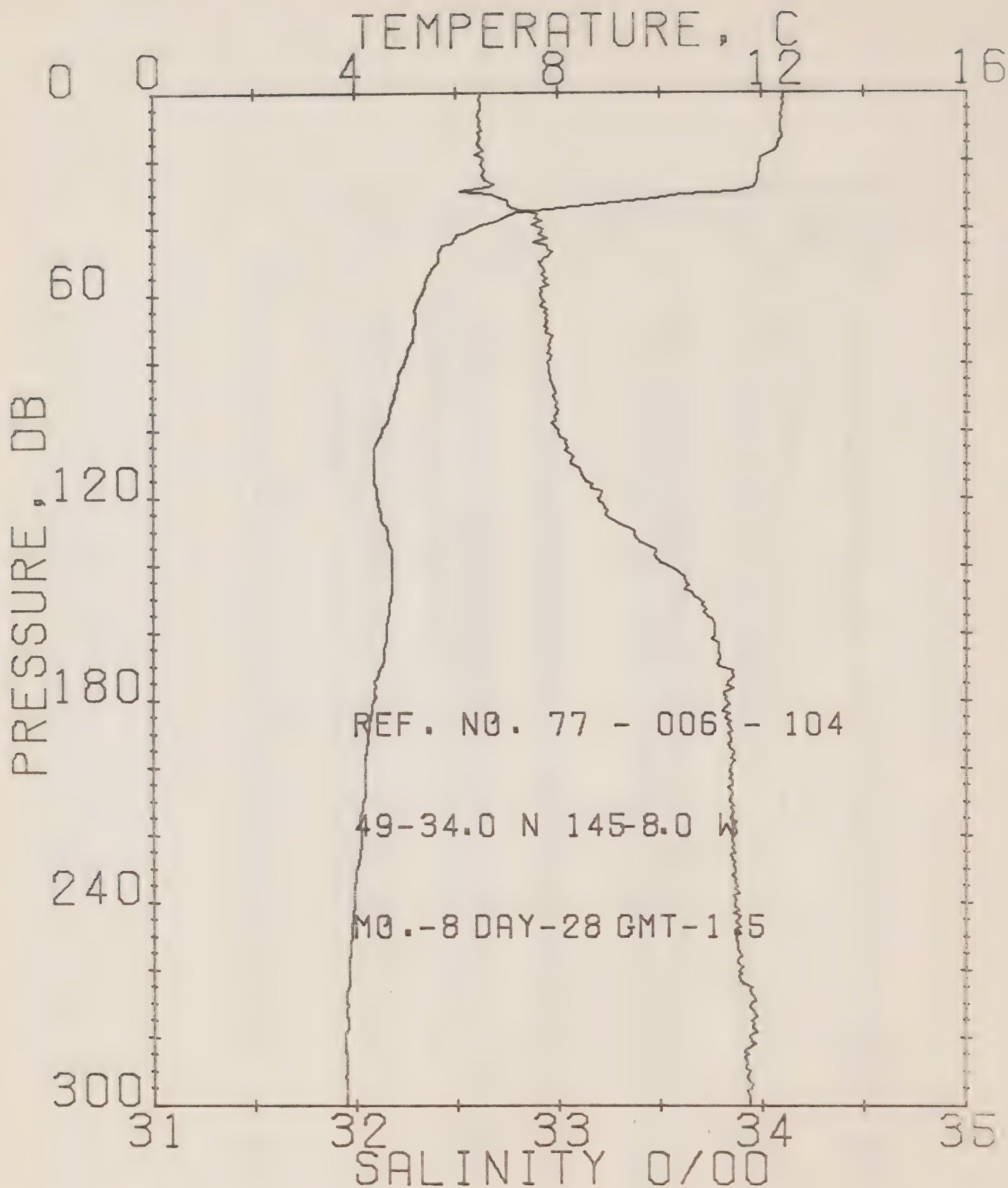
REFERENCE NO. 77- 8-102

DATE 27/ 8/77

POSITION 50- .00N, 145- .00W

GMT 14.9

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.57	32.64	0	24.67	328.1	.00	.00	1496.
5	12.51	32.64	5	24.68	327.2	.16	.00	1496.
10	12.50	32.64	10	24.68	326.9	.33	.02	1496.
15	12.50	32.64	15	24.69	326.8	.40	.04	1496.
20	12.46	32.63	20	24.69	326.8	.65	.07	1496.
25	12.32	32.62	25	24.71	325.2	.82	.10	1496.
30	12.23	32.62	30	24.72	324.1	.98	.15	1496.
35	9.92	32.73	35	25.22	276.7	1.13	.20	1488.
40	8.76	32.77	40	25.43	256.1	1.26	.25	1484.
45	7.96	32.79	45	25.57	243.0	1.39	.30	1481.
50	7.04	32.84	50	25.74	227.2	1.51	.36	1477.
55	6.33	32.85	55	25.84	217.4	1.62	.42	1474.
60	5.85	32.88	60	25.92	210.0	1.73	.48	1473.
65	5.42	32.89	65	25.96	204.0	1.83	.55	1471.
70	5.28	32.89	70	25.99	202.8	1.93	.62	1470.
75	5.17	32.91	75	26.02	200.2	2.03	.69	1470.
80	5.02	32.91	80	26.05	198.1	2.13	.77	1470.
90	4.79	32.94	89	26.09	193.9	2.33	.94	1469.
100	4.65	32.98	99	26.14	189.2	2.52	1.10	1469.
110	4.68	33.13	109	26.25	178.4	2.70	1.30	1469.
120	4.67	33.33	119	26.41	163.5	2.88	1.50	1469.
130	4.63	33.55	129	26.59	146.4	3.03	1.70	1470.
140	4.51	33.70	139	26.72	134.3	3.17	1.92	1470.
150	4.46	33.79	149	26.80	127.0	3.30	2.11	1470.
160	4.33	33.81	159	26.83	124.0	3.43	2.31	1469.
170	4.28	33.84	169	26.86	121.7	3.55	2.52	1469.
180	4.24	33.85	179	26.87	120.7	3.67	2.74	1469.
190	4.18	33.83	189	26.86	121.2	3.70	2.96	1469.
200	4.16	33.84	199	26.87	120.6	3.92	3.20	1469.
210	4.04	33.85	209	26.89	119.1	4.04	3.45	1469.
220	3.99	33.87	218	26.91	116.6	4.15	3.71	1469.
230	3.97	33.87	228	26.91	116.7	4.27	3.96	1469.
240	3.92	33.88	238	26.93	115.7	4.39	4.20	1469.
250	3.85	33.89	248	26.94	114.1	4.50	4.50	1469.
260	3.85	33.91	258	26.96	112.7	4.61	4.84	1469.
270	3.82	33.91	268	26.96	112.6	4.73	5.15	1469.
280	3.80	33.93	278	26.96	110.5	4.84	5.40	1469.
290	3.78	33.94	288	26.99	109.8	4.95	5.70	1469.
300	3.77	33.95	298	26.99	109.7	5.06	6.11	1469.



## OFFSHORE OCEANOGRAPHY GROUP

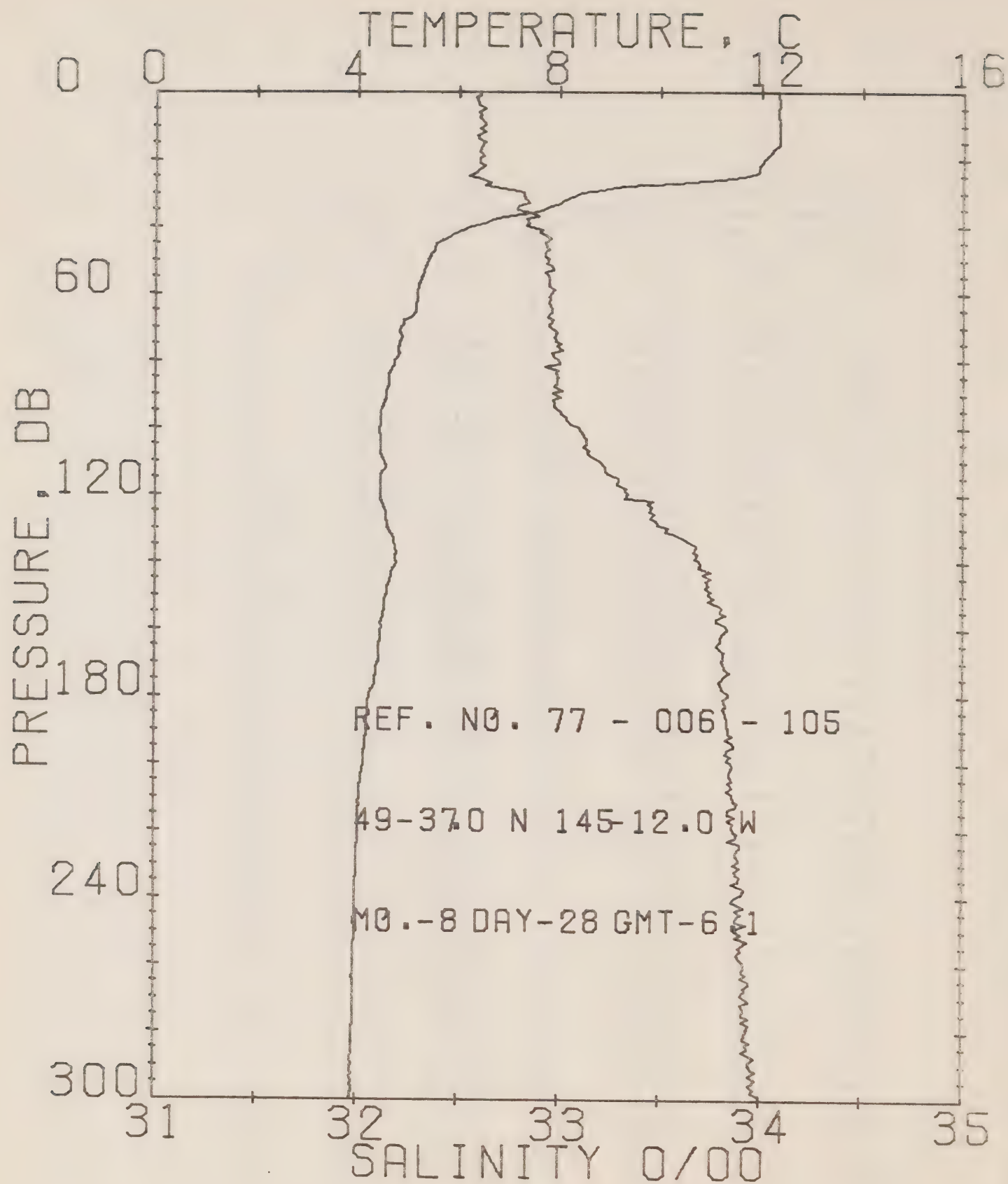
REFERENCE NO. 77- 3-104

DATE 23/ 8/ 77

POSITION 49-34.0N, 145- 8.0W GMT 1.5

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.42	32.82	0	24.68	326.7	.00	.00	1496.
5	12.40	32.82	5	24.69	326.1	.16	.00	1496.
10	12.38	32.81	10	24.69	326.6	.33	.02	1496.
15	12.33	32.81	15	24.69	326.1	.49	.04	1496.
20	11.96	32.83	20	24.78	318.0	.65	.07	1495.
25	11.92	32.84	25	24.79	317.1	.81	.10	1495.
30	10.57	32.84	30	25.04	293.3	.97	.15	1490.
35	7.34	32.84	35	25.70	231.0	1.10	.19	1473.
40	6.32	32.92	40	25.89	212.2	1.21	.23	1474.
45	5.76	32.94	45	25.98	204.0	1.31	.26	1472.
50	5.67	32.92	50	25.97	204.5	1.41	.30	1472.
55	5.41	32.95	55	26.00	199.6	1.51	.38	1471.
60	5.32	32.91	60	26.01	201.1	1.61	.44	1471.
65	5.19	32.93	65	26.04	198.2	1.71	.50	1470.
70	5.16	32.95	70	26.06	197.0	1.81	.57	1470.
75	5.08	32.95	75	26.07	195.6	1.91	.64	1470.
80	4.98	32.95	80	26.08	194.9	2.01	.72	1470.
90	4.76	32.98	89	26.12	190.8	2.20	.89	1463.
100	4.53	33.00	99	26.17	186.6	2.39	1.07	1463.
110	4.37	33.06	109	26.23	180.6	2.57	1.26	1463.
120	4.44	33.20	119	26.34	170.5	2.75	1.47	1468.
130	4.65	33.37	129	26.45	160.3	2.91	1.66	1470.
140	4.71	33.53	139	26.57	149.3	3.07	1.90	1470.
150	4.89	33.68	149	26.69	137.4	3.21	2.11	1470.
160	4.81	33.77	159	26.70	130.6	3.35	2.32	1470.
170	4.51	33.79	169	26.79	128.1	3.47	2.53	1470.
180	4.34	33.82	179	26.84	123.9	3.60	2.75	1470.
190	4.25	33.34	189	26.86	121.6	3.72	2.96	1469.
200	4.19	33.35	199	26.37	120.4	3.34	3.22	1469.
210	4.14	33.84	209	26.87	120.5	3.96	3.46	1469.
220	4.10	33.86	218	26.89	118.7	4.08	3.74	1469.
230	4.01	33.86	228	26.91	117.5	4.20	4.01	1469.
240	3.96	33.87	238	26.91	116.8	4.32	4.22	1469.
250	3.91	33.87	248	26.92	116.0	4.43	4.56	1469.
260	3.86	33.89	258	26.94	114.5	4.55	4.86	1469.
270	3.82	33.95	268	26.99	109.9	4.66	5.16	1469.
280	3.79	33.94	278	26.99	109.8	4.77	5.46	1469.
290	3.81	33.93	288	26.96	110.7	4.88	5.86	1469.
300	3.80	33.94	298	26.99	110.3	4.99	6.14	1469.





## OFFSHORE OCEANOGRAPHY GROUP

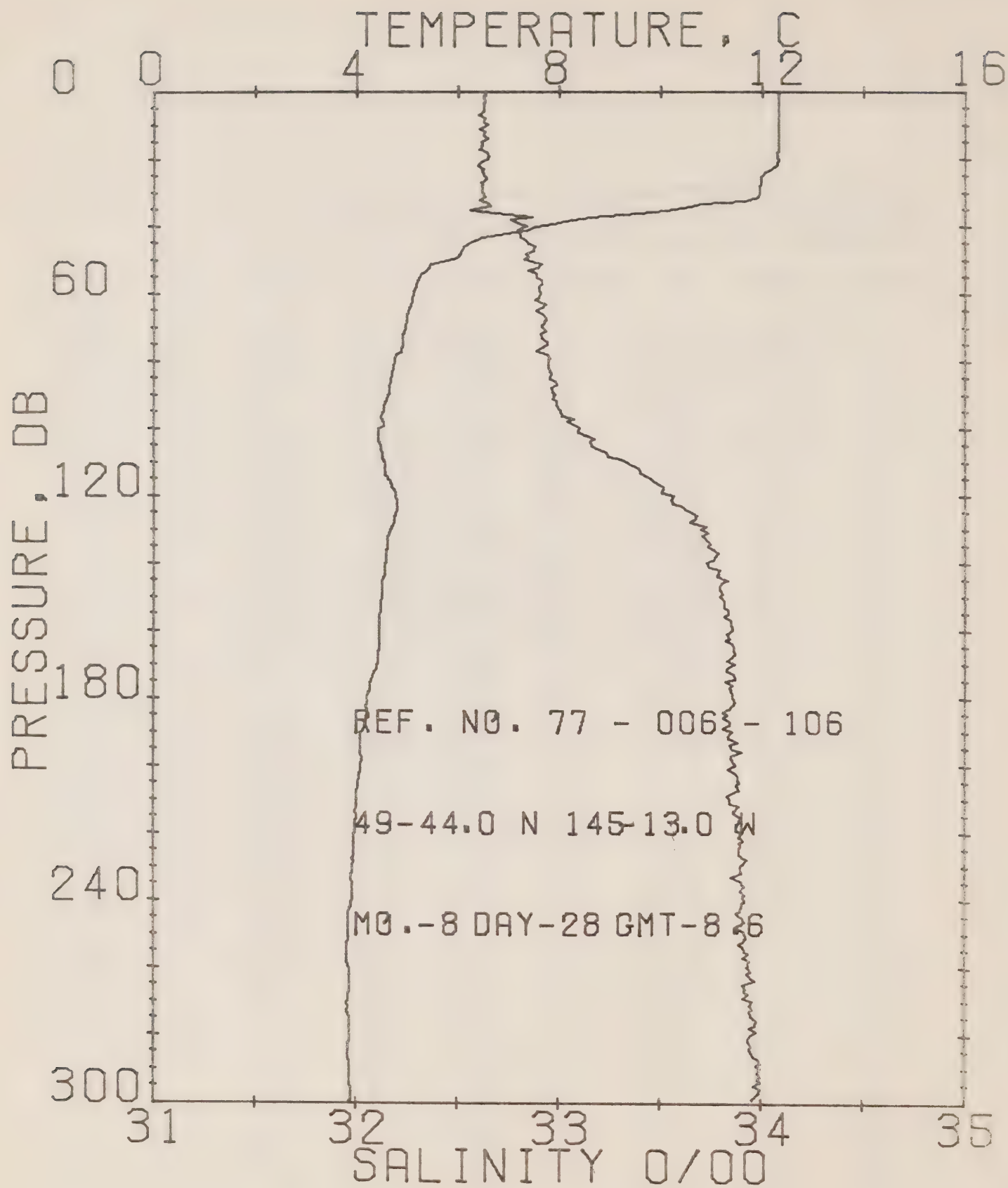
REFERENCE NO. 77- 0-105

DATE 28/ 8/77

POSITION 49-57.0N, 145-12.0W

GAT 6.1

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA J	POT. cm	SOUND
0	12.33	32.80	0	24.69	326.5	.00	.00	1490.
5	12.33	32.82	5	24.70	324.9	.16	.00	1490.
10	12.34	32.83	10	24.71	324.9	.33	.02	1490.
15	12.34	32.83	15	24.71	324.8	.49	.04	1490.
20	12.35	32.86	20	24.74	322.0	.65	.07	1495.
25	11.86	32.85	25	24.78	318.5	.81	.10	1494.
30	8.44	32.82	30	25.52	247.8	.95	.14	1482.
35	7.67	32.79	35	25.31	239.2	1.07	.18	1479.
40	6.24	32.83	40	25.34	217.7	1.19	.23	1474.
45	5.56	32.93	45	25.99	202.7	1.29	.27	1471.
50	5.38	32.94	50	26.03	199.4	1.39	.32	1471.
55	5.20	32.94	55	26.04	198.5	1.49	.37	1470.
60	5.18	32.96	60	26.07	196.0	1.59	.43	1470.
65	5.14	32.96	65	26.07	195.7	1.69	.45	1470.
70	4.85	32.95	70	26.09	193.7	1.79	.50	1469.
75	4.83	33.00	75	26.13	189.7	1.89	.50	1469.
80	4.74	32.99	80	26.13	189.4	1.97	.71	1469.
90	4.55	32.97	89	26.14	189.0	2.16	.87	1468.
100	4.44	33.09	99	26.24	179.2	2.35	1.00	1468.
110	4.52	33.19	109	26.32	172.3	2.53	1.24	1468.
120	4.46	33.34	119	26.44	160.6	2.69	1.40	1469.
130	4.02	33.54	129	26.58	147.5	2.84	1.50	1470.
140	4.76	33.70	139	26.69	137.2	2.99	1.62	1471.
150	4.56	33.74	149	26.75	131.6	3.12	2.02	1470.
160	4.46	33.83	159	26.80	124.2	3.25	2.22	1470.
170	4.40	33.81	169	26.82	125.4	3.37	2.40	1470.
180	4.23	33.84	179	26.86	121.3	3.50	2.65	1469.
190	4.18	33.84	189	26.87	120.9	3.62	2.80	1469.
200	4.13	33.85	199	26.88	119.6	3.74	3.12	1469.
210	4.05	33.80	208	26.90	118.2	3.86	3.37	1469.
220	4.03	33.86	218	26.90	117.8	3.99	3.60	1469.
230	4.01	33.87	228	26.91	116.8	4.09	3.90	1469.
240	3.98	33.88	238	26.92	115.9	4.21	4.17	1469.
250	3.97	33.88	248	26.92	116.2	4.32	4.40	1469.
260	3.94	33.92	258	26.95	113.2	4.40	4.70	1469.
270	3.94	33.93	268	26.96	112.6	4.55	5.00	1470.
280	3.92	33.93	278	26.97	111.8	4.66	5.30	1470.
290	3.90	33.95	288	26.96	110.8	4.77	5.70	1470.
300	3.91	33.99	298	27.01	108.0	4.89	5.90	1470.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6-106

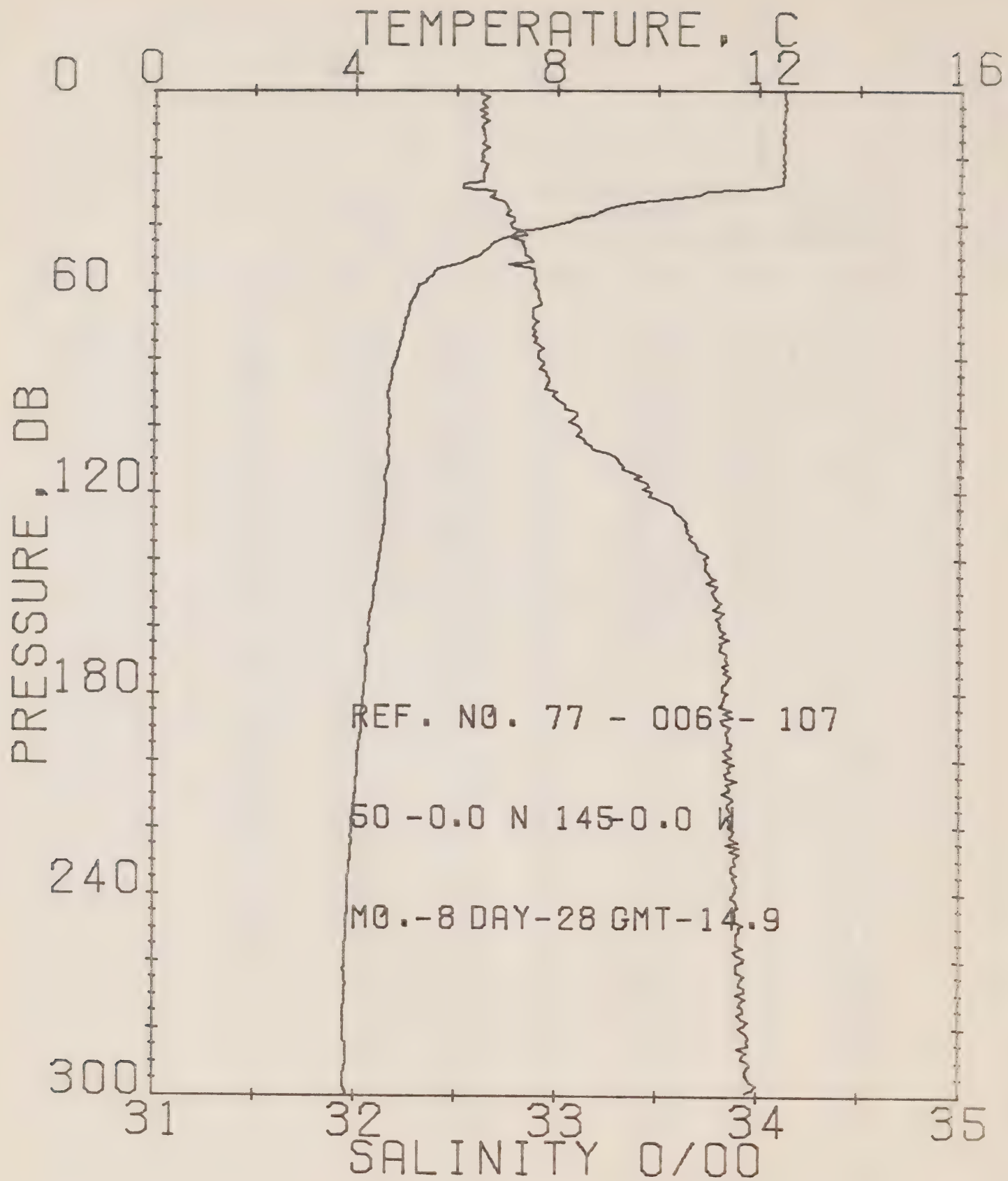
DATE 28/ 8/77

POSITION 49-44.0N, 145-13.0W

GMT 8.6

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA J	POT. EN	SOUND
0	12.31	32.63	0	24.72	323.7	.00	.00	1496.
5	12.31	32.63	5	24.71	324.3	.14	.00	1496.
10	12.31	32.65	10	24.73	322.8	.32	.02	1496.
15	12.32	32.61	15	24.70	325.5	.40	.04	1496.
20	12.32	32.65	20	24.73	323.0	.65	.07	1496.
25	11.99	32.63	25	24.78	318.5	.81	.10	1495.
30	11.95	32.62	30	24.78	318.8	.97	.13	1495.
35	10.12	32.57	35	25.06	291.8	1.12	.20	1488.
40	7.52	32.54	40	25.67	253.6	1.25	.25	1479.
45	5.21	32.85	45	25.85	216.4	1.36	.30	1474.
50	5.78	32.83	50	25.89	212.5	1.47	.35	1472.
55	5.23	32.89	55	26.00	202.2	1.57	.40	1470.
60	5.12	32.91	60	26.03	199.5	1.67	.45	1470.
65	5.02	32.89	65	26.03	199.7	1.77	.52	1469.
70	4.95	32.92	70	26.05	197.1	1.87	.55	1469.
75	4.90	32.94	75	26.08	194.6	1.97	.60	1469.
80	4.76	32.95	80	26.10	193.0	2.07	.74	1469.
90	4.62	32.98	89	26.14	189.3	2.26	.91	1468.
100	4.43	33.10	99	26.25	178.4	2.44	1.09	1468.
110	4.57	33.53	109	26.45	162.1	2.61	1.27	1469.
120	4.78	33.56	119	26.58	147.3	2.77	1.45	1470.
130	4.67	33.70	129	26.70	135.9	2.91	1.60	1470.
140	4.57	33.73	139	26.74	133.5	3.04	1.81	1470.
150	4.50	33.80	149	26.80	126.9	3.17	2.00	1470.
160	4.46	33.85	159	26.85	122.4	3.29	2.20	1470.
170	4.40	33.86	169	26.86	121.3	3.42	2.41	1470.
180	4.21	33.85	179	26.87	120.3	3.54	2.62	1469.
190	4.10	33.85	189	26.88	119.5	3.66	2.83	1469.
200	4.08	33.88	199	26.90	118.1	3.78	3.09	1469.
210	3.99	33.84	209	26.89	118.9	3.90	3.30	1469.
220	3.96	33.89	218	26.93	114.7	4.01	3.55	1469.
230	3.92	33.89	228	26.94	114.6	4.13	3.80	1469.
240	3.91	33.91	238	26.95	113.0	4.24	4.12	1469.
250	3.83	33.91	248	26.96	112.4	4.36	4.41	1469.
260	3.80	33.93	258	26.97	111.4	4.47	4.70	1469.
270	3.82	33.95	268	26.99	109.8	4.58	5.00	1469.
280	3.86	33.95	278	26.99	110.1	4.69	5.31	1469.
290	3.87	33.99	288	27.02	106.9	4.80	5.60	1470.
300	3.88	33.98	298	27.01	108.0	4.91	5.90	1470.





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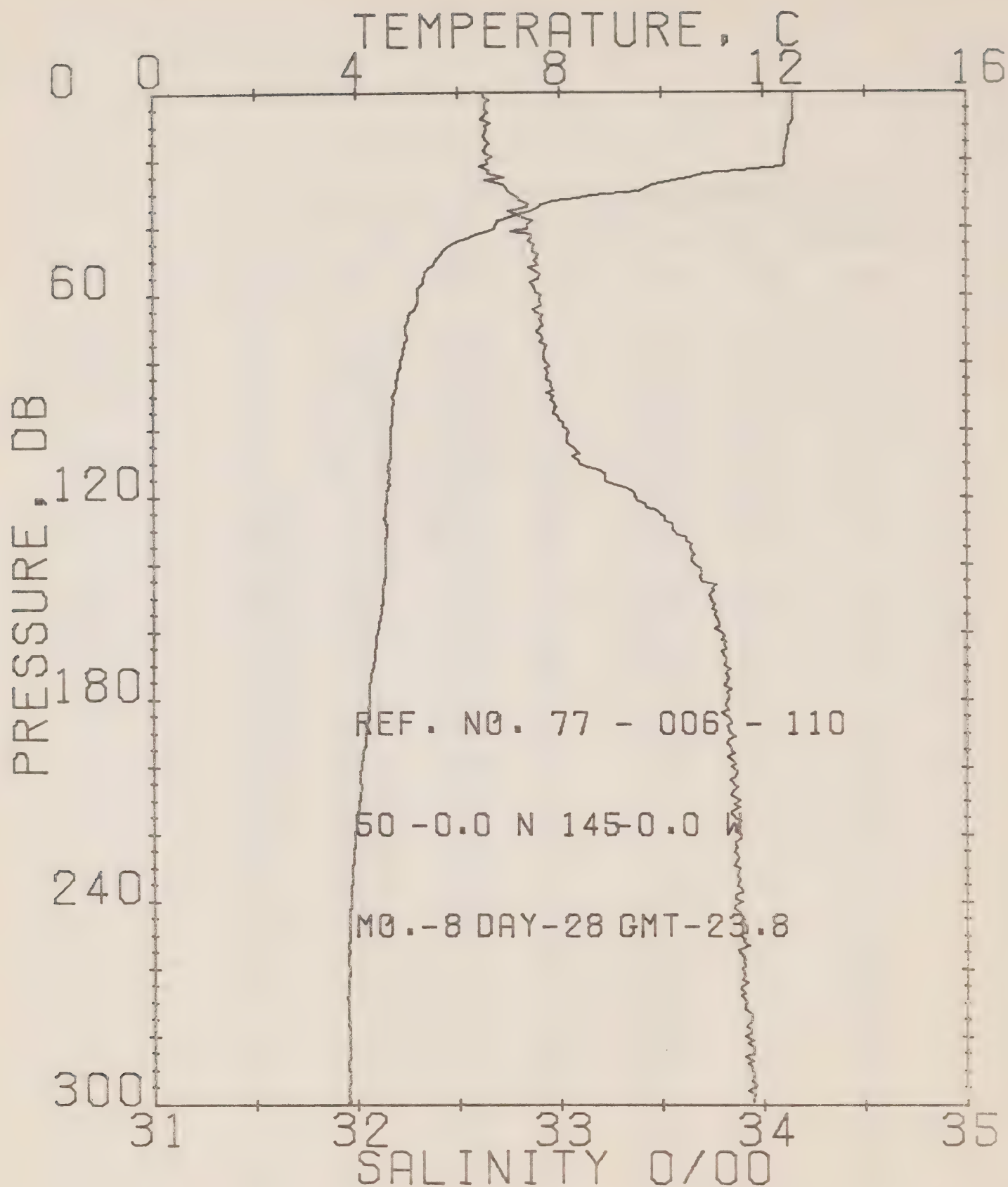
REFERENCE NO. 77- 6-107

DATE 28/ 8/ 77

POSITION 50- 00N, 145- 00W

GMT 14.9

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.51	32.62	0	24.67	328.0	.00	.00	1496.
5	12.53	32.64	5	24.68	326.9	.16	.00	1496.
10	12.50	32.63	10	24.68	327.2	.33	.02	1496.
15	12.49	32.64	15	24.69	326.8	.40	.04	1496.
20	12.49	32.63	20	24.68	327.5	.65	.07	1497.
25	12.50	32.63	25	24.68	327.6	.82	.10	1497.
30	11.04	32.69	30	24.99	297.9	.98	.15	1492.
35	9.00	32.76	35	25.38	260.7	1.12	.20	1484.
40	8.03	32.77	40	25.54	245.8	1.25	.24	1481.
45	8.76	32.83	45	25.77	224.2	1.36	.30	1476.
50	8.26	32.86	50	25.85	216.0	1.47	.35	1474.
55	5.52	32.89	55	25.97	205.2	1.58	.41	1471.
60	5.22	32.90	60	26.01	200.9	1.68	.46	1470.
65	5.06	32.88	65	26.01	200.9	1.78	.55	1469.
70	4.97	32.89	70	26.03	199.2	1.88	.60	1469.
75	4.68	32.89	75	26.04	198.4	1.98	.67	1469.
80	4.60	32.91	80	26.06	196.2	2.08	.75	1469.
90	4.65	32.99	89	26.15	188.3	2.27	.91	1468.
100	4.67	33.10	99	26.23	180.7	2.46	1.09	1469.
110	4.67	33.30	109	26.39	165.6	2.63	1.26	1469.
120	4.61	33.47	119	26.53	152.4	2.79	1.47	1469.
130	4.57	33.64	129	26.67	139.5	2.94	1.66	1470.
140	4.47	33.73	139	26.75	131.6	3.07	1.84	1469.
150	4.38	33.78	149	26.80	127.2	3.20	2.00	1469.
160	4.29	33.81	159	26.83	123.9	3.32	2.22	1469.
170	4.23	33.84	169	26.86	121.3	3.45	2.43	1469.
180	4.18	33.86	179	26.88	119.5	3.57	2.65	1469.
190	4.12	33.86	189	26.89	118.5	3.60	2.87	1469.
200	4.05	33.84	199	26.88	119.7	3.81	3.11	1469.
210	4.00	33.83	208	26.88	119.8	3.92	3.36	1469.
220	3.93	33.86	218	26.91	117.1	4.04	3.61	1469.
230	3.91	33.89	228	26.93	115.0	4.16	3.86	1469.
240	3.87	33.88	238	26.93	114.8	4.27	4.10	1469.
250	3.84	33.91	248	26.96	112.3	4.39	4.43	1469.
260	3.81	33.94	258	26.98	110.4	4.50	4.75	1469.
270	3.82	33.90	268	26.98	113.0	4.61	5.00	1469.
280	3.76	33.91	278	26.97	111.9	4.72	5.34	1469.
290	3.83	33.96	288	27.00	109.3	4.83	5.66	1469.
300	3.83	33.95	293	27.00	109.5	4.94	5.99	1470.



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REFERENCE NO. 77- 6-110

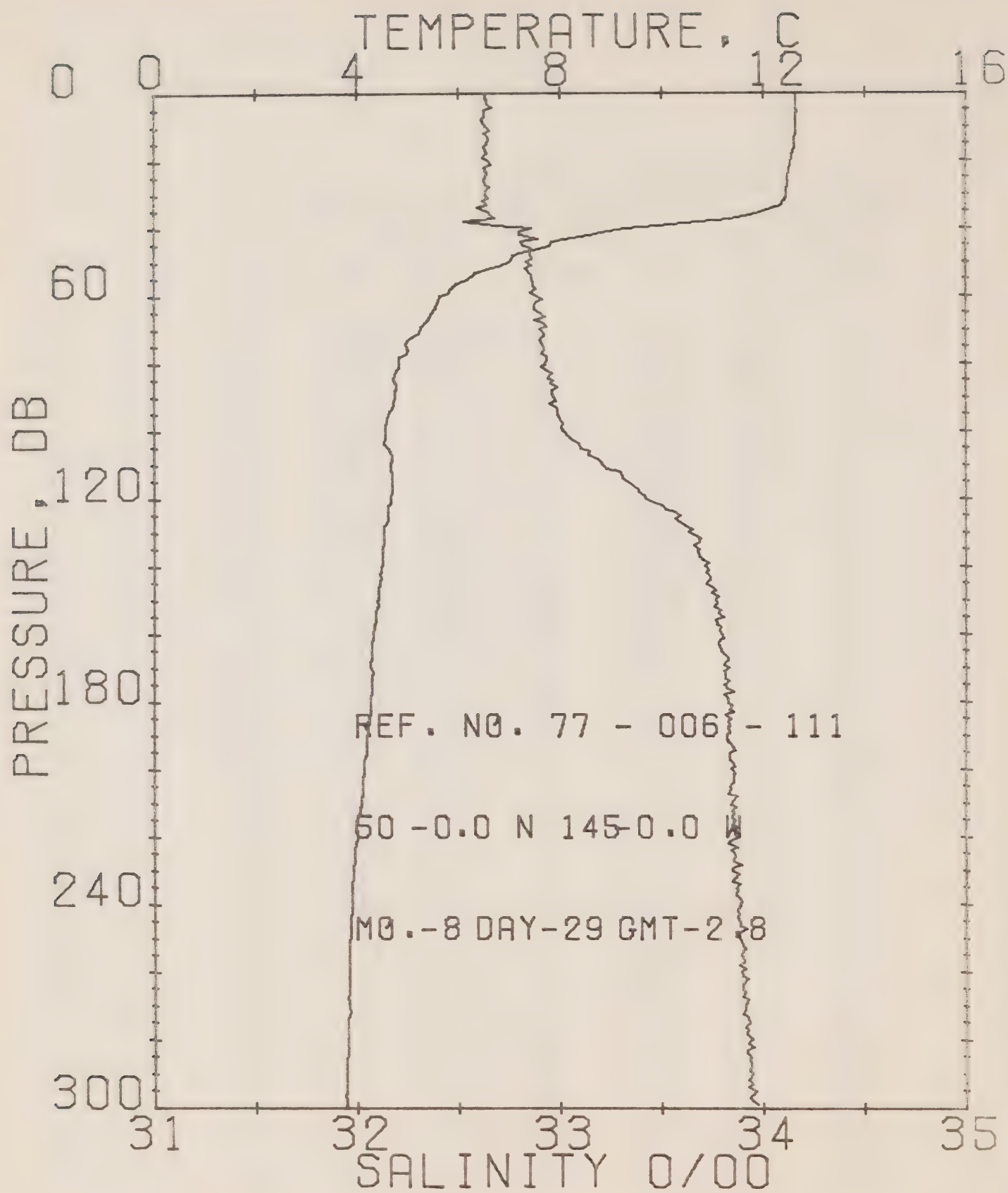
DATE 28/ 8/77

POSITION 30- .0N, 145- .0W

GMT 23.8

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.59	32.62	0	24.66	329.3	.00	.00	1497.
5	12.59	32.63	5	24.66	328.8	.16	.00	1497.
10	12.52	32.63	10	24.68	327.7	.33	.02	1496.
15	12.46	32.65	15	24.70	325.1	.49	.04	1496.
20	12.42	32.65	20	24.71	325.1	.65	.07	1496.
25	10.60	32.71	25	25.09	288.7	.81	.10	1490.
30	8.62	32.77	30	25.42	256.7	.95	.14	1484.
35	7.44	32.77	35	25.63	237.6	1.07	.18	1478.
40	6.69	32.84	40	25.79	222.5	1.18	.22	1476.
45	5.85	32.87	45	25.91	210.4	1.29	.27	1472.
50	5.54	32.87	50	25.95	206.5	1.40	.32	1471.
55	5.32	32.89	55	25.99	202.6	1.50	.38	1470.
60	5.19	32.90	60	26.02	200.6	1.60	.44	1470.
65	5.06	32.88	65	26.02	200.8	1.70	.50	1469.
70	4.96	32.90	70	26.04	198.6	1.80	.57	1469.
75	4.93	32.94	75	26.07	195.5	1.90	.64	1469.
80	4.85	32.92	80	26.07	195.5	2.00	.72	1469.
90	4.71	32.96	89	26.12	191.2	2.19	.89	1469.
100	4.67	33.03	99	26.18	185.5	2.38	1.07	1469.
110	4.63	33.10	109	26.23	180.3	2.56	1.27	1469.
120	4.59	33.37	119	26.45	159.7	2.73	1.46	1469.
130	4.59	33.55	129	26.60	146.2	2.88	1.66	1470.
140	4.55	33.66	139	26.69	137.8	3.02	1.85	1470.
150	4.50	33.74	149	26.76	131.3	3.16	2.05	1470.
160	4.40	33.79	159	26.80	126.8	3.29	2.25	1470.
170	4.32	33.81	169	26.85	124.5	3.41	2.46	1469.
180	4.23	33.82	179	26.85	122.3	3.54	2.66	1469.
190	4.17	33.83	189	26.87	121.1	3.66	2.91	1469.
200	4.07	33.84	199	26.88	119.6	3.78	3.15	1469.
210	4.04	33.88	208	26.92	116.4	3.90	3.40	1469.
220	3.95	33.88	218	26.93	115.4	4.01	3.66	1469.
230	3.90	33.88	228	26.93	115.4	4.13	3.92	1469.
240	3.85	33.89	238	26.94	114.1	4.25	4.20	1469.
250	3.83	33.88	248	26.94	114.5	4.36	4.48	1469.
260	3.84	33.89	258	26.95	113.9	4.47	4.78	1469.
270	3.81	33.91	268	26.97	112.1	4.59	5.06	1469.
280	3.83	33.91	278	26.96	112.9	4.70	5.40	1469.
290	3.83	33.94	288	26.96	110.5	4.81	5.72	1469.
300	3.83	33.93	298	26.98	111.1	4.92	6.05	1470.





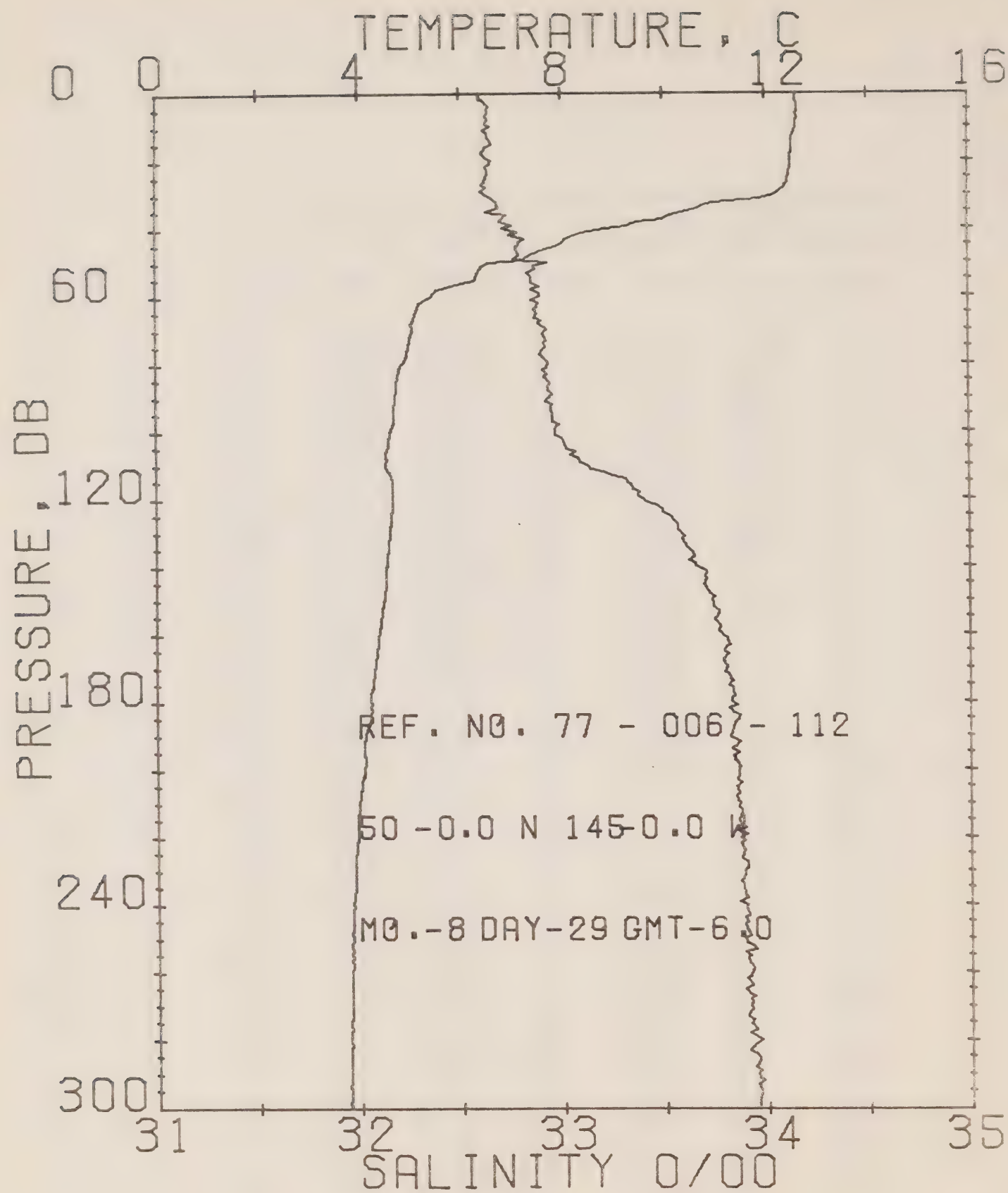
## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6-111

DATE 29/ 8/77

POSITION 50- .0N, 145- .0W GMT 2.8

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.64	32.63	0	24.65	329.8	.00	.00	1497.
5	12.65	32.64	5	24.65	329.8	.16	.00	1497.
10	12.65	32.63	10	24.65	330.0	.33	.02	1497.
15	12.62	32.64	15	24.67	328.8	.49	.04	1497.
20	12.53	32.64	20	24.68	327.9	.66	.07	1497.
25	12.48	32.63	25	24.69	327.2	.82	.10	1497.
30	12.45	32.63	30	24.69	326.9	.99	.15	1497.
35	11.93	32.64	35	24.50	316.8	1.15	.20	1495.
40	9.34	32.64	40	25.40	259.7	1.30	.20	1480.
45	7.80	32.62	45	25.61	239.0	1.42	.31	1480.
50	6.98	32.64	50	25.74	226.7	1.54	.37	1477.
55	6.15	32.86	55	25.87	214.8	1.65	.43	1474.
60	5.64	32.86	60	25.94	207.6	1.75	.49	1472.
65	5.48	32.90	65	25.98	204.2	1.85	.50	1471.
70	5.24	32.90	70	26.01	201.1	1.95	.60	1470.
75	4.99	32.92	75	26.05	197.5	2.05	.70	1469.
80	4.83	32.93	80	26.08	195.0	2.15	.70	1469.
90	4.74	32.97	89	26.12	191.2	2.34	.94	1469.
100	4.57	33.01	99	26.17	186.3	2.53	1.13	1468.
110	4.67	33.21	109	26.32	172.6	2.71	1.32	1469.
120	4.67	33.42	119	26.48	156.7	2.88	1.51	1469.
130	4.54	33.64	129	26.67	139.3	3.02	1.69	1469.
140	4.48	33.71	139	26.74	133.0	3.16	1.88	1469.
150	4.41	33.77	149	26.79	128.2	3.29	2.07	1469.
160	4.31	33.79	159	26.82	125.4	3.41	2.27	1469.
170	4.29	33.83	169	26.85	122.4	3.54	2.40	1469.
180	4.26	33.83	179	26.85	122.6	3.66	2.70	1469.
190	4.19	33.82	189	26.85	122.2	3.78	2.93	1469.
200	4.12	33.84	199	26.87	120.2	3.90	3.17	1469.
210	4.07	33.84	209	26.88	119.7	4.02	3.42	1469.
220	3.99	33.86	218	26.91	117.3	4.14	3.68	1469.
230	3.93	33.85	228	26.90	117.9	4.26	3.95	1469.
240	3.89	33.89	238	26.94	114.5	4.38	4.23	1469.
250	3.85	33.88	248	26.94	114.6	4.49	4.52	1469.
260	3.84	33.90	258	26.95	113.8	4.60	4.81	1469.
270	3.84	33.91	268	26.96	112.7	4.72	5.11	1469.
280	3.81	33.94	278	26.99	109.9	4.83	5.40	1469.
290	3.78	33.95	288	26.99	109.7	4.94	5.75	1469.
300	3.77	33.96	298	27.01	108.4	5.05	6.00	1469.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6-112

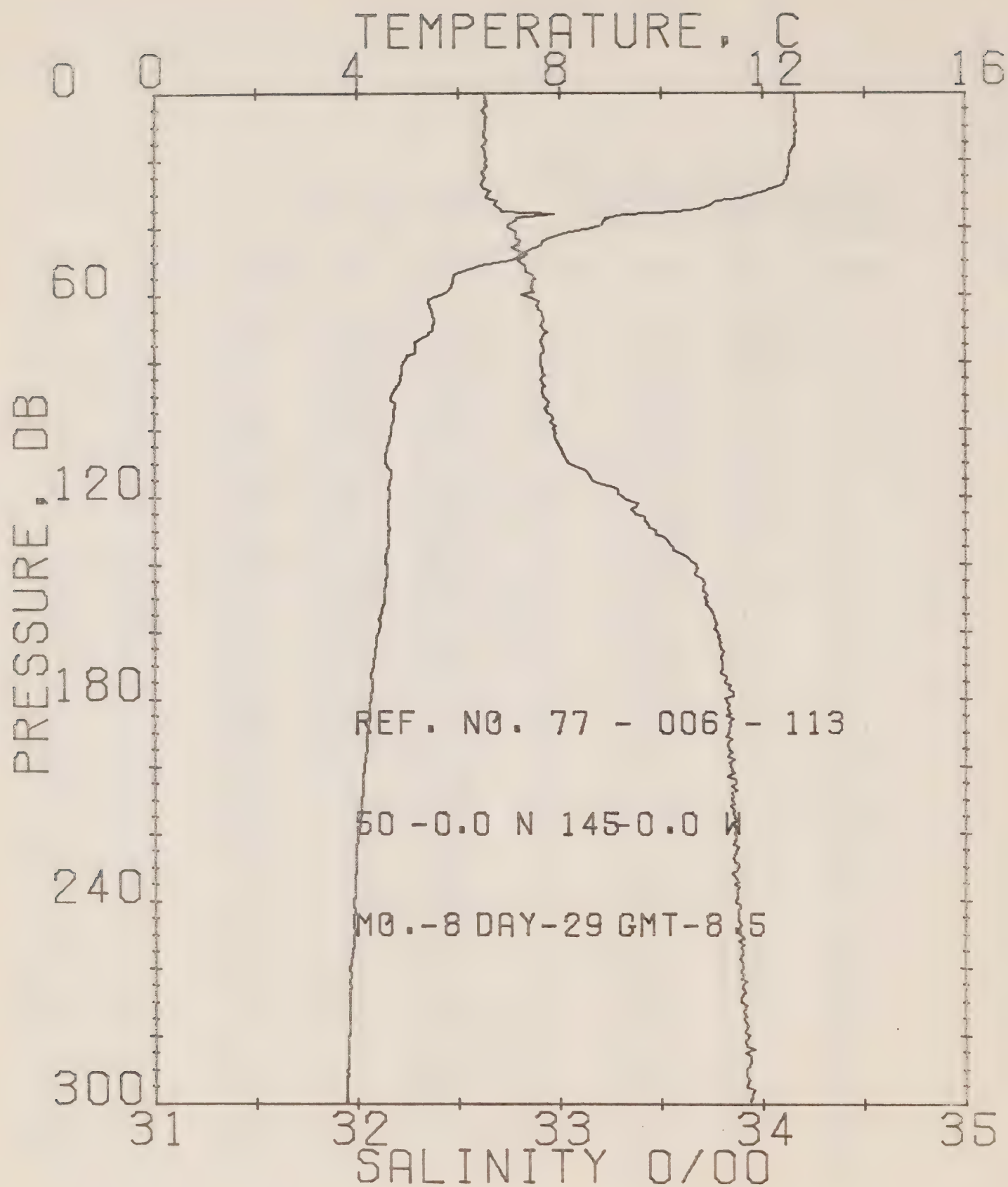
DATE 29/ 8/77

POSITION 50- 00N, 145- 00W

GMT 5.0

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.82	32.80	0	24.63	331.5	.00	.88	1497.
5	12.83	32.84	5	24.66	328.9	.17	.88	1497.
10	12.81	32.85	10	24.67	328.0	.33	.88	1497.
15	12.84	32.88	15	24.69	326.4	.49	.88	1497.
20	12.82	32.88	20	24.69	326.2	.66	.87	1497.
25	12.48	32.84	25	24.69	326.7	.82	.86	1495.
30	12.18	32.83	30	24.74	322.2	.98	.85	1496.
35	10.59	32.84	35	25.07	290.8	1.13	.80	1489.
40	8.94	32.72	40	25.37	262.3	1.27	.80	1484.
45	7.90	32.79	45	25.56	242.5	1.40	.81	1480.
50	6.82	32.92	50	25.86	216.0	1.51	.80	1478.
55	6.51	32.85	55	25.84	217.3	1.62	.82	1474.
60	5.43	32.89	60	25.96	203.9	1.73	.80	1471.
65	5.11	32.88	65	26.01	201.4	1.83	.80	1470.
70	5.06	32.93	70	26.05	197.5	1.93	.82	1470.
75	5.00	32.92	75	26.06	197.1	2.03	.85	1469.
80	4.85	32.93	80	26.08	194.7	2.13	.77	1469.
90	4.73	32.94	89	26.10	193.0	2.32	.94	1469.
100	4.62	32.97	99	26.13	190.2	2.51	1.12	1468.
110	4.54	33.12	109	26.26	177.8	2.70	1.32	1468.
120	4.67	33.39	119	26.46	158.9	2.86	1.51	1469.
130	4.61	33.58	129	26.62	144.0	3.01	1.70	1470.
140	4.55	33.66	139	26.66	138.0	3.15	1.90	1470.
150	4.49	33.74	149	26.75	131.5	3.29	2.10	1470.
160	4.38	33.78	159	26.80	126.9	3.42	2.30	1469.
170	4.29	33.81	169	26.85	124.2	3.54	2.51	1469.
180	4.23	33.83	179	26.86	122.0	3.66	2.70	1469.
190	4.11	33.82	189	26.86	121.3	3.79	2.90	1469.
200	4.09	33.86	199	26.89	118.5	3.90	3.10	1469.
210	3.99	33.88	209	26.91	117.1	4.02	3.44	1469.
220	3.94	33.88	218	26.92	115.8	4.14	3.70	1469.
230	3.89	33.89	228	26.95	114.7	4.25	3.90	1469.
240	3.85	33.90	238	26.95	113.4	4.37	4.24	1469.
250	3.83	33.89	248	26.94	114.1	4.48	4.52	1469.
260	3.82	33.92	258	26.97	111.7	4.60	4.82	1469.
270	3.81	33.91	268	26.96	112.2	4.71	5.11	1469.
280	3.80	33.97	278	27.01	108.2	4.82	5.40	1469.
290	3.78	33.95	288	26.99	109.6	4.93	5.70	1469.
300	3.77	33.96	298	27.00	108.9	5.04	6.07	1469.





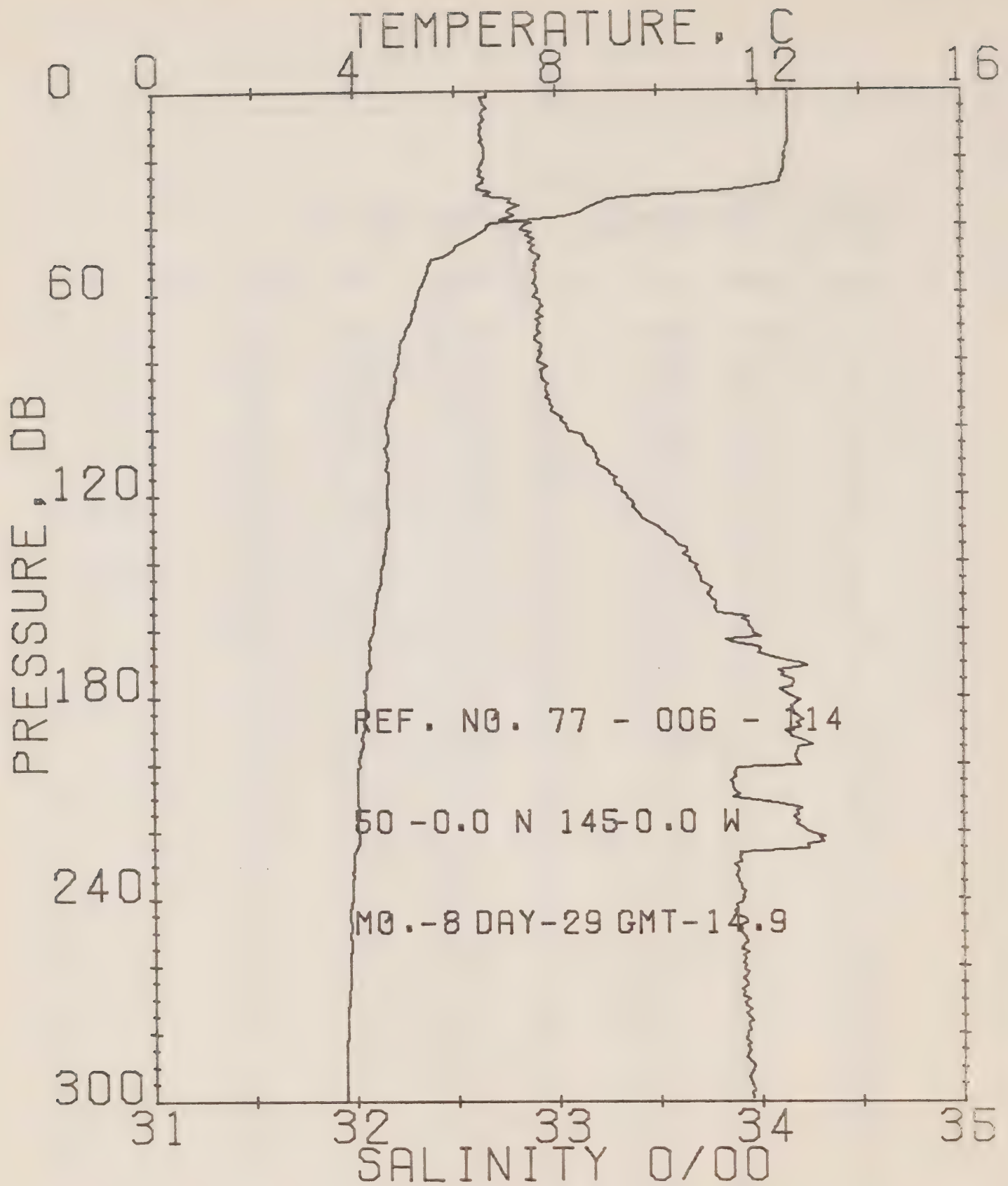
## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8-113

DATE 29/ 8/ 77

POSITION 50- .00N, 145- .00W GMT 8.5

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.05	32.04	0	24.65	329.6	.00	.00	1497.
5	12.06	32.02	5	24.64	330.9	.16	.00	1497.
10	12.05	32.04	10	24.65	329.8	.33	.02	1497.
15	12.04	32.04	15	24.65	329.8	.50	.04	1497.
20	12.02	32.04	20	24.66	327.6	.66	.07	1497.
25	12.48	32.03	25	24.69	327.1	.82	.10	1497.
30	11.05	32.05	30	24.82	314.9	.98	.15	1494.
35	10.42	32.71	35	25.12	286.2	1.14	.20	1490.
40	8.07	32.75	40	25.45	256.4	1.26	.25	1485.
45	7.03	32.80	45	25.62	237.9	1.39	.30	1479.
50	6.90	32.80	50	25.72	228.6	1.50	.36	1477.
55	5.90	32.88	55	25.91	210.5	1.61	.42	1475.
60	5.04	32.82	60	25.96	211.6	1.72	.46	1472.
65	5.49	32.92	65	25.99	203.0	1.82	.54	1471.
70	5.49	32.92	70	25.99	202.9	1.92	.61	1471.
75	5.15	32.91	75	26.03	199.6	2.02	.69	1470.
80	4.92	32.91	80	26.05	197.6	2.12	.77	1469.
90	4.57	32.92	89	26.09	194.1	2.32	.95	1468.
100	4.57	32.97	99	26.13	190.4	2.51	1.14	1469.
110	4.57	33.04	109	26.19	184.2	2.70	1.32	1468.
120	4.54	33.01	119	26.40	165.0	2.87	1.50	1469.
130	4.62	33.47	129	26.55	152.6	3.03	1.72	1470.
140	4.58	33.67	139	26.69	137.5	3.17	1.90	1470.
150	4.53	33.72	149	26.73	133.4	3.31	2.10	1470.
160	4.42	33.77	159	26.79	128.0	3.44	2.30	1470.
170	4.51	33.80	169	26.82	125.0	3.57	2.50	1469.
180	4.27	33.82	179	26.84	123.4	3.69	2.77	1469.
190	4.20	33.83	189	26.86	121.7	3.81	2.92	1469.
200	4.13	33.84	199	26.87	120.5	3.93	3.24	1469.
210	4.08	33.85	209	26.88	119.3	4.05	3.46	1469.
220	4.01	33.86	218	26.90	117.7	4.17	3.74	1469.
230	3.97	33.88	228	26.92	115.8	4.29	4.01	1469.
240	3.93	33.87	238	26.92	116.4	4.40	4.29	1469.
250	3.93	33.89	248	26.93	115.0	4.52	4.56	1469.
260	3.85	33.90	258	26.95	113.6	4.63	4.83	1469.
270	3.85	33.90	268	26.95	113.9	4.75	5.10	1469.
280	3.82	33.93	278	26.96	111.2	4.86	5.36	1469.
290	3.80	33.92	288	26.97	111.7	4.97	5.62	1469.
300	3.78	33.95	296	27.00	109.4	5.08	5.10	1469.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6-114

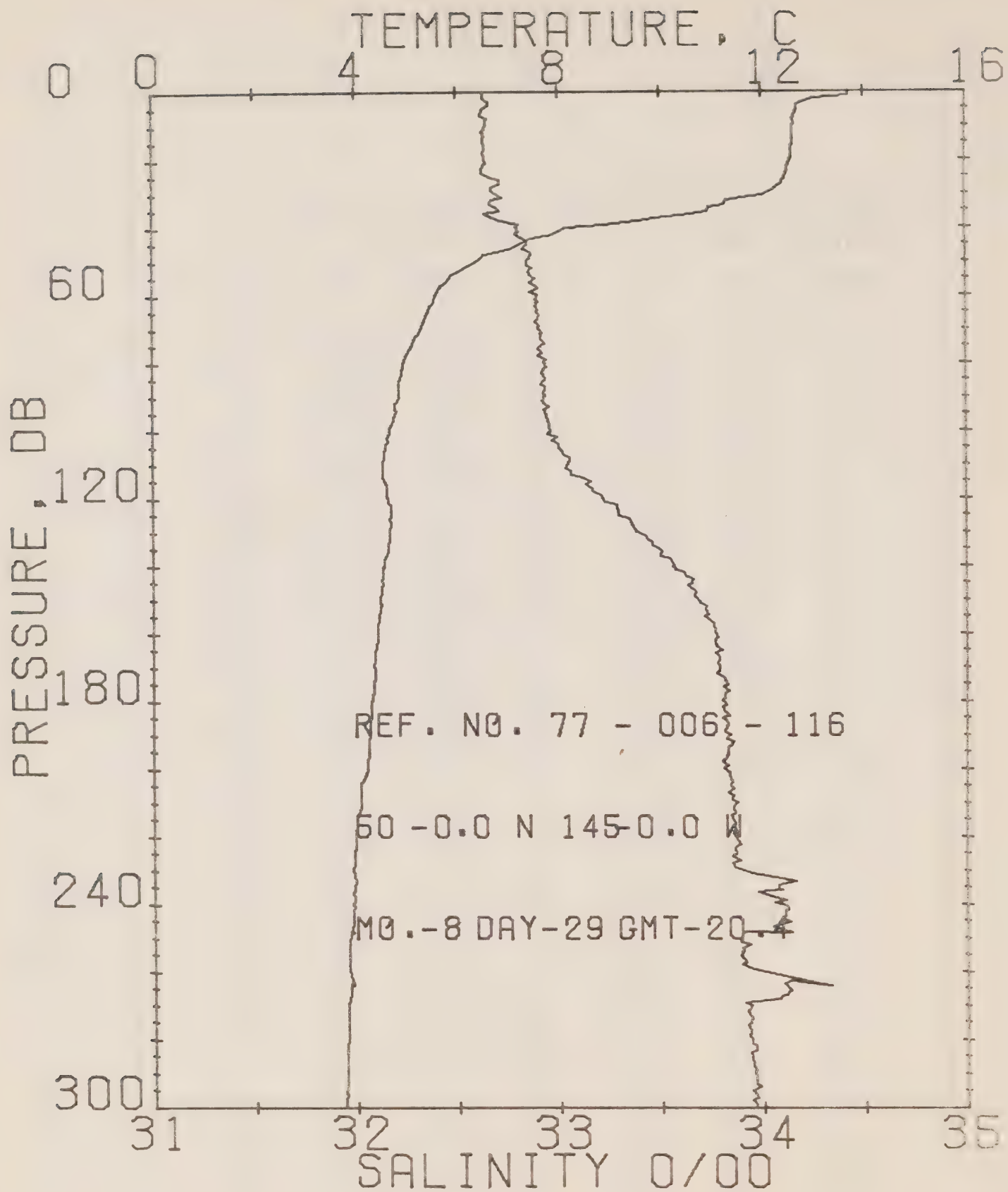
DATE 29/ 3/77

POSITION 50- 00N, 145- 00W

GMT 14.9

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.60	32.86	0	24.68	327.0	.00	.00	1497.
5	12.59	32.86	5	24.68	326.9	.16	.00	1497.
10	12.59	32.83	10	24.66	329.3	.33	.02	1497.
15	12.59	32.82	15	24.66	329.6	.49	.04	1497.
20	12.52	32.85	20	24.69	326.8	.66	.07	1497.
25	12.47	32.82	25	24.68	327.7	.82	.10	1497.
30	11.19	32.87	30	24.95	301.9	.98	.15	1492.
35	8.58	32.78	35	25.47	252.6	1.11	.19	1485.
40	6.66	32.85	40	25.79	221.6	1.23	.24	1475.
45	6.12	32.87	45	25.88	213.7	1.34	.29	1475.
50	5.54	32.91	50	25.99	203.4	1.45	.34	1471.
55	5.41	32.90	55	25.99	203.1	1.55	.39	1471.
60	5.27	32.91	60	26.01	201.0	1.65	.45	1470.
65	5.17	32.91	65	26.03	199.7	1.75	.51	1470.
70	5.08	32.91	70	26.03	199.2	1.85	.56	1470.
75	4.92	32.92	75	26.06	196.3	1.95	.60	1469.
80	4.67	32.91	80	26.06	196.7	2.05	.75	1469.
90	4.77	32.96	89	26.11	192.2	2.24	.90	1469.
100	4.63	33.05	99	26.19	184.0	2.43	1.06	1469.
110	4.64	33.20	109	26.32	172.5	2.61	1.27	1469.
120	4.65	33.34	119	26.42	162.6	2.77	1.47	1469.
130	4.64	33.50	129	26.55	150.4	2.93	1.67	1470.
140	4.55	33.60	139	26.68	138.1	3.08	1.87	1470.
150	4.43	33.74	149	26.77	130.3	3.21	2.07	1469.
160	4.34	33.95	159	26.94	113.8	3.33	2.26	1469.
170	4.28	34.17	169	27.12	96.8	3.44	2.45	1470.
180	4.19	34.14	179	27.16	98.6	3.54	2.62	1469.
190	4.15	34.14	189	27.11	98.0	3.64	2.80	1469.
200	4.07	34.19	199	27.16	93.5	3.73	2.95	1469.
210	4.02	33.86	208	26.96	117.9	3.85	3.25	1469.
220	4.04	34.25	216	27.19	90.6	3.95	3.45	1470.
230	3.93	33.87	226	26.92	116.2	4.04	3.67	1469.
240	3.91	33.91	236	26.96	112.9	4.16	3.90	1469.
250	3.88	33.89	246	26.94	114.1	4.27	4.20	1469.
260	3.87	33.92	256	26.96	112.4	4.39	4.50	1469.
270	3.83	33.93	268	26.96	116.8	4.50	4.80	1469.
280	3.81	33.93	276	26.96	111.1	4.61	5.14	1469.
290	3.78	33.96	286	27.00	108.6	4.72	5.46	1469.
300	3.78	33.96	296	27.01	108.6	4.83	5.79	1469.





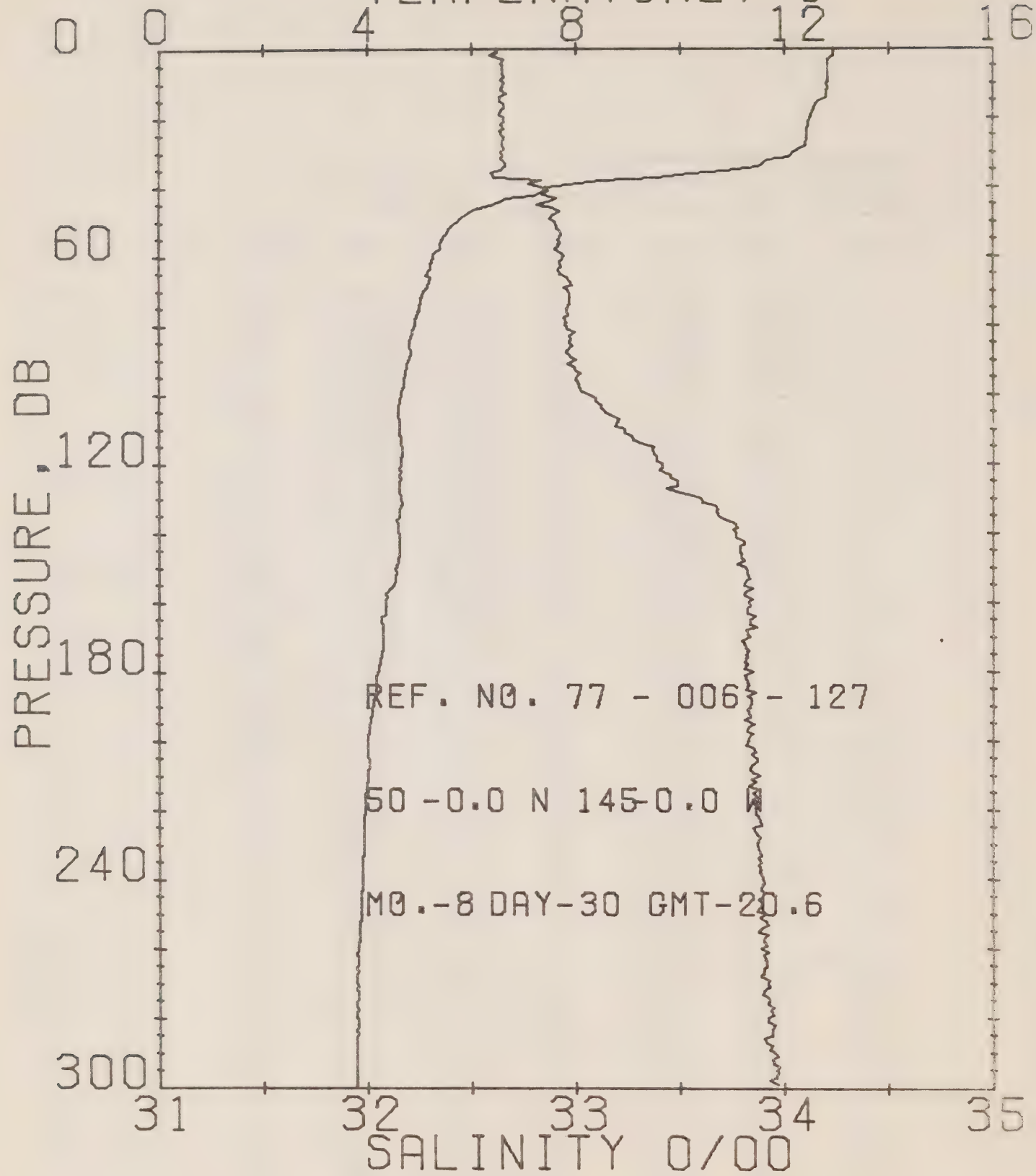
## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6-116 DATE 29/ 3/77

POSITION 50- 00N, 145- 00W GMT 20.4

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	PCT. E.T.	SOUND
0	13.71	32.84	0	24.44	349.7	.00	.00	1500.
5	12.89	32.84	5	24.65	330.3	.17	.00	1497.
10	12.82	32.85	10	24.67	328.5	.33	.02	1497.
15	12.80	32.83	15	24.66	329.1	.50	.04	1497.
20	12.57	32.84	20	24.67	328.5	.66	.07	1497.
25	12.45	32.86	25	24.71	324.7	.83	.10	1496.
30	12.06	32.89	30	24.81	315.4	.99	.13	1495.
35	10.93	32.71	35	25.03	294.5	1.14	.20	1491.
40	8.14	32.79	40	25.54	245.6	1.28	.25	1481.
45	7.22	32.85	45	25.72	229.0	1.30	.30	1476.
50	6.58	32.85	50	25.83	218.4	1.50	.36	1475.
55	5.85	32.88	55	25.92	209.5	1.61	.41	1475.
60	5.58	32.90	60	25.97	205.4	1.72	.45	1472.
65	5.42	32.89	65	25.98	203.8	1.82	.54	1471.
70	5.27	32.90	70	26.01	201.5	1.92	.51	1470.
75	5.10	32.91	75	26.04	198.8	2.02	.65	1470.
80	4.95	32.95	80	26.06	196.3	2.12	.75	1469.
90	4.84	32.93	89	26.08	194.8	2.31	.95	1469.
100	4.86	32.96	99	26.12	191.1	2.51	1.12	1469.
110	4.54	33.05	109	26.20	183.1	2.60	1.32	1465.
120	4.63	33.21	119	26.33	171.8	2.87	1.55	1469.
130	4.67	33.38	129	26.45	159.8	3.04	1.75	1470.
140	4.56	33.56	139	26.61	145.0	3.10	1.95	1470.
150	4.49	33.68	149	26.71	135.6	3.33	2.15	1470.
160	4.43	33.76	159	26.76	128.7	3.46	2.35	1470.
170	4.36	33.78	169	26.81	126.6	3.59	2.57	1470.
180	4.51	33.80	179	26.83	124.9	3.71	2.80	1469.
190	4.26	33.83	189	26.86	122.0	3.84	3.05	1469.
200	4.21	33.81	199	26.84	123.3	3.96	3.27	1469.
210	4.09	33.87	209	26.90	117.8	4.08	3.50	1469.
220	3.98	33.86	218	26.96	117.6	4.20	3.75	1469.
230	3.94	33.91	228	26.95	113.5	4.31	4.00	1469.
240	3.93	34.07	238	27.00	101.1	4.42	4.30	1469.
250	3.85	33.39	248	26.94	114.1	4.52	4.55	1469.
260	3.85	34.02	258	27.05	104.5	4.63	4.85	1469.
270	3.81	33.93	268	26.96	110.7	4.73	5.11	1469.
280	3.80	33.94	278	26.99	110.2	4.80	5.42	1469.
290	3.78	33.95	288	27.00	109.1	4.95	5.74	1469.
300	3.77	33.94	298	26.99	109.9	5.06	6.07	1469.

TEMPERATURE, C



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6-127

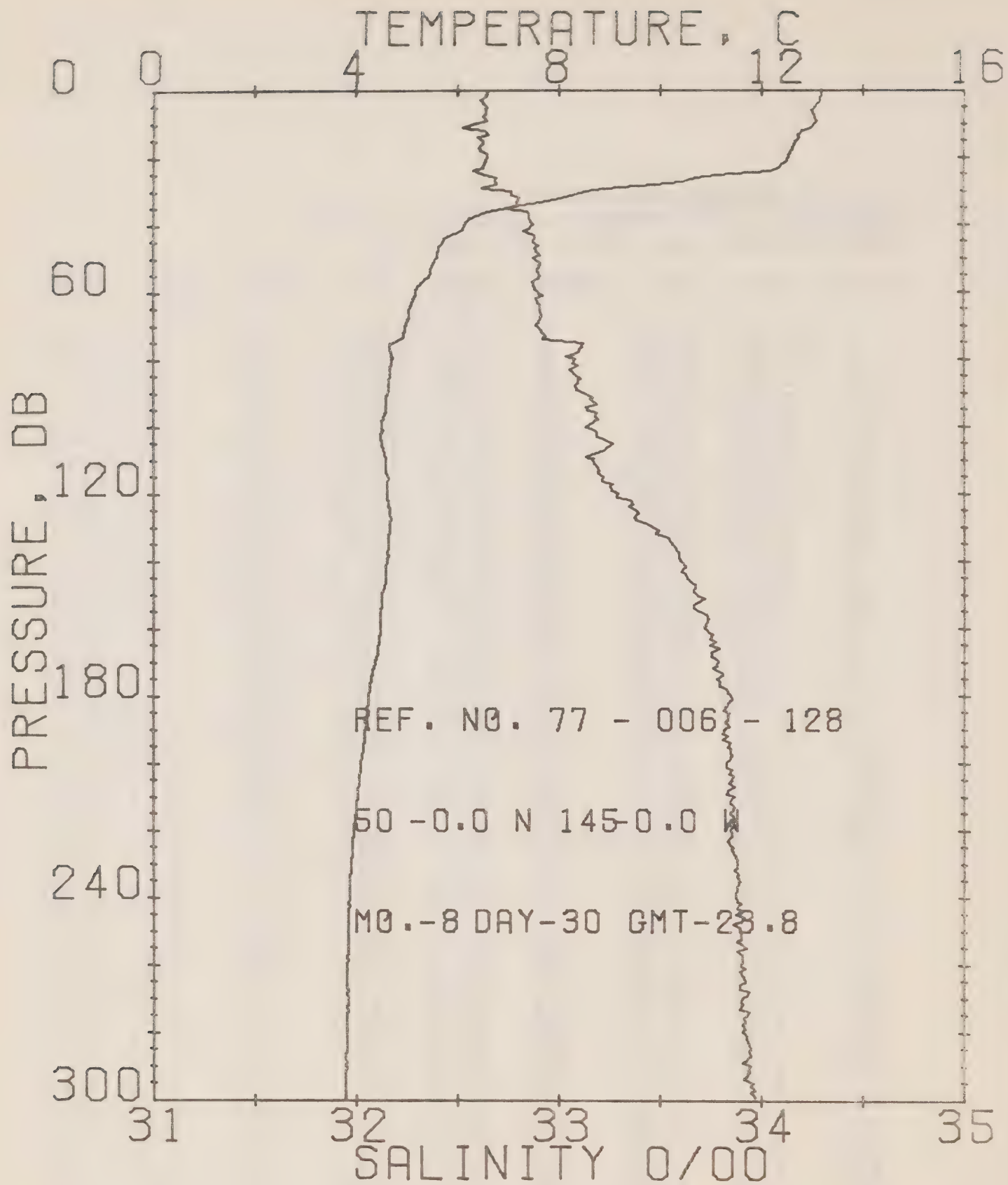
DATE 30/ 8/77

POSITION 50- .0N, 145- .0W

GMT 20.6

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.94	32.62	0	24.59	336.0	.00	.00	1498.
5	12.82	32.64	5	24.63	332.3	.17	.00	1497.
10	12.81	32.65	10	24.64	331.5	.33	.02	1497.
15	12.65	32.64	15	24.65	329.9	.50	.04	1497.
20	12.48	32.65	20	24.70	325.8	.66	.07	1497.
25	12.43	32.64	25	24.70	325.4	.83	.10	1496.
30	12.16	32.64	30	24.75	320.9	.99	.15	1496.
35	10.91	32.64	35	24.98	299.3	1.14	.20	1491.
40	7.43	32.83	40	25.68	232.9	1.28	.25	1479.
45	6.38	32.82	45	25.81	220.2	1.39	.30	1474.
50	5.70	32.89	50	25.95	206.7	1.49	.35	1472.
55	5.41	32.91	55	26.00	202.3	1.60	.41	1471.
60	5.25	32.94	60	26.04	198.5	1.70	.47	1470.
65	5.12	32.92	65	26.04	198.7	1.80	.53	1470.
70	5.08	32.96	70	26.07	195.3	1.89	.60	1470.
75	4.99	32.95	75	26.08	194.6	1.99	.67	1469.
80	4.89	32.95	80	26.08	194.4	2.09	.74	1469.
90	4.77	33.00	89	26.14	189.2	2.28	.91	1469.
100	4.63	33.05	99	26.20	183.6	2.47	1.09	1469.
110	4.62	33.23	109	26.34	170.5	2.64	1.28	1469.
120	4.65	33.41	119	26.48	157.4	2.81	1.47	1469.
130	4.64	33.59	129	26.62	143.6	2.96	1.67	1470.
140	4.60	33.77	139	26.77	130.0	3.10	1.85	1470.
150	4.54	33.81	149	26.81	126.3	3.22	2.04	1470.
160	4.35	33.83	159	26.85	122.9	3.35	2.24	1469.
170	4.29	33.83	169	26.85	122.4	3.47	2.45	1469.
180	4.19	33.85	179	26.87	120.2	3.60	2.67	1469.
190	4.09	33.83	189	26.87	120.5	3.72	2.90	1469.
200	4.01	33.83	199	26.88	120.0	3.84	3.13	1469.
210	4.00	33.88	209	26.92	116.3	3.96	3.38	1469.
220	3.94	33.86	218	26.91	117.2	4.07	3.64	1469.
230	3.91	33.87	228	26.92	116.3	4.19	3.91	1469.
240	3.89	33.89	238	26.94	114.3	4.30	4.18	1469.
250	3.86	33.91	248	26.96	112.8	4.42	4.47	1469.
260	3.81	33.89	258	26.94	114.1	4.53	4.76	1469.
270	3.80	33.92	268	26.97	111.4	4.64	5.07	1469.
280	3.80	33.92	278	26.97	111.4	4.76	5.38	1469.
290	3.79	33.94	288	26.99	109.9	4.87	5.70	1469.
300	3.79	33.97	298	27.02	107.6	4.98	6.03	1469.





## OFFSHORE OCEANOGRAPHY GROUP

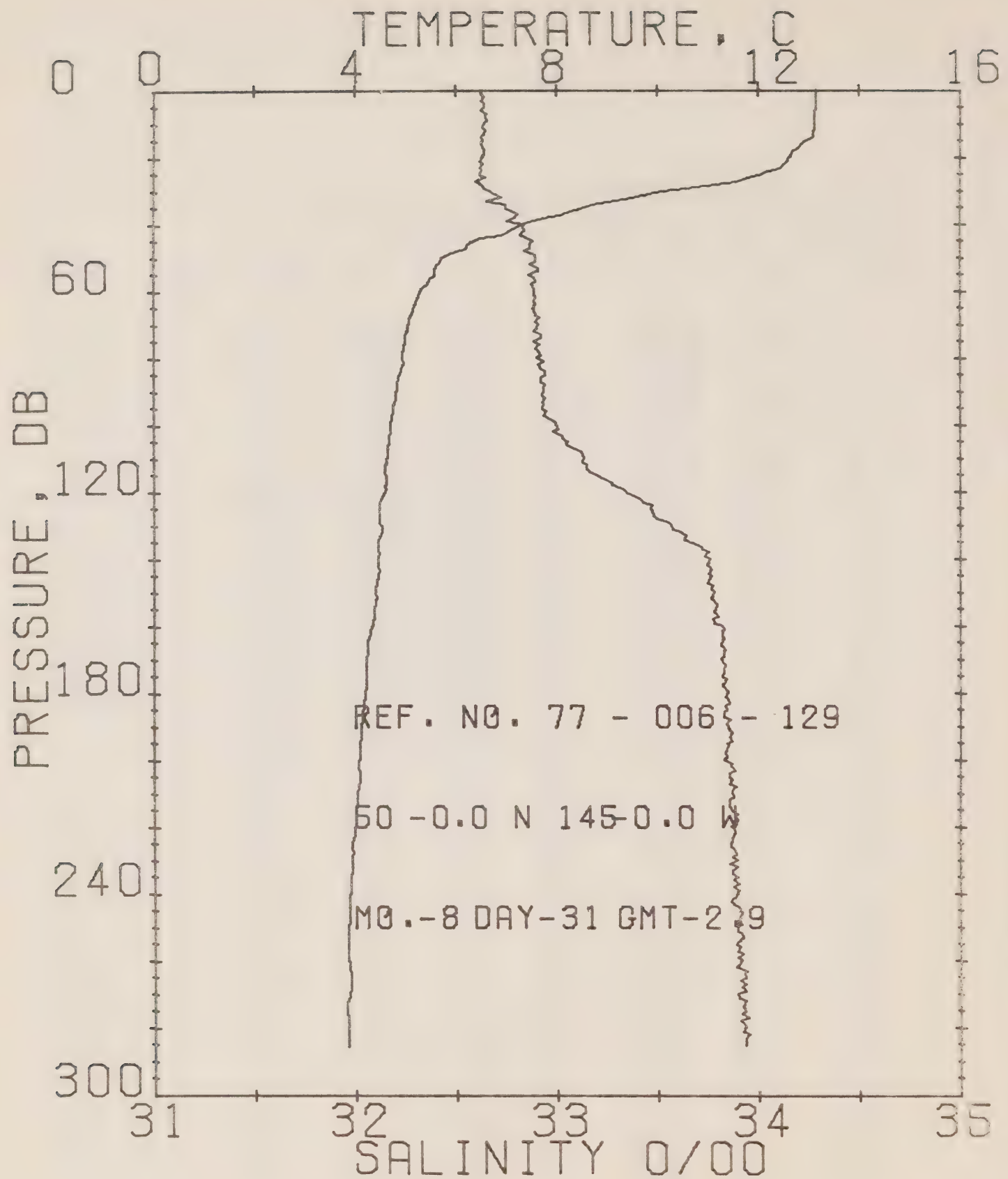
REFERENCE NO. 77- 6-128

DATE 30/ 8/77

POSITION 50- .0N, 145- .0W

GMT 23.8

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	15.17	32.64	0	24.56	338.5	.00	.00	1498.
5	15.05	32.64	5	24.58	336.4	.17	.00	1498.
10	15.05	32.60	10	24.55	340.1	.34	.02	1498.
15	14.68	32.63	15	24.64	331.2	.51	.04	1497.
20	14.53	32.65	20	24.68	327.1	.67	.07	1497.
25	14.12	32.64	25	24.94	303.2	.83	.11	1492.
30	8.53	32.76	30	25.46	253.5	.97	.14	1463.
35	6.87	32.74	35	25.68	232.0	1.09	.16	1476.
40	6.13	32.67	40	25.88	213.3	1.20	.23	1473.
45	5.71	32.37	45	25.95	208.3	1.31	.27	1472.
50	5.57	32.87	50	25.95	207.0	1.41	.32	1471.
55	5.43	32.90	55	25.99	203.1	1.51	.36	1471.
60	5.17	32.89	60	26.01	201.0	1.62	.44	1470.
65	5.04	32.91	65	26.04	198.8	1.72	.50	1469.
70	4.96	32.89	70	26.03	199.2	1.81	.57	1469.
75	4.72	33.07	75	26.20	182.9	1.91	.64	1468.
80	4.70	33.07	80	26.26	182.8	2.00	.71	1469.
90	4.62	33.12	89	26.25	178.6	2.18	.87	1468.
100	4.52	33.14	99	26.26	176.0	2.36	1.04	1468.
110	4.59	33.17	109	26.29	174.8	2.53	1.22	1469.
120	4.61	33.29	119	26.39	166.0	2.70	1.42	1469.
130	4.66	33.45	129	26.51	154.1	2.86	1.66	1470.
140	4.60	33.60	139	26.63	142.6	3.01	1.86	1470.
150	4.50	33.68	149	26.71	135.6	3.15	2.08	1470.
160	4.47	33.72	159	26.74	132.3	3.28	2.25	1470.
170	4.37	33.78	169	26.81	126.8	3.41	2.46	1470.
180	4.24	33.84	179	26.87	120.9	3.54	2.65	1469.
190	4.15	33.82	189	26.86	121.7	3.66	2.92	1469.
200	4.08	33.83	199	26.87	120.9	3.78	3.16	1469.
210	4.02	33.86	208	26.90	117.8	3.90	3.40	1469.
220	3.94	33.85	218	26.90	118.1	4.02	3.66	1469.
230	3.89	33.88	228	26.93	115.1	4.13	3.90	1469.
240	3.85	33.87	238	26.93	115.5	4.25	4.21	1469.
250	3.83	33.89	248	26.95	113.6	4.36	4.49	1469.
260	3.82	33.90	258	26.95	113.1	4.48	4.79	1469.
270	3.83	33.91	268	26.96	112.8	4.59	5.09	1469.
280	3.81	33.91	278	26.96	112.5	4.70	5.40	1469.
290	3.80	33.94	288	26.99	110.1	4.81	5.70	1469.
300	3.80	33.96	298	27.00	108.8	4.92	6.00	1470.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8-129

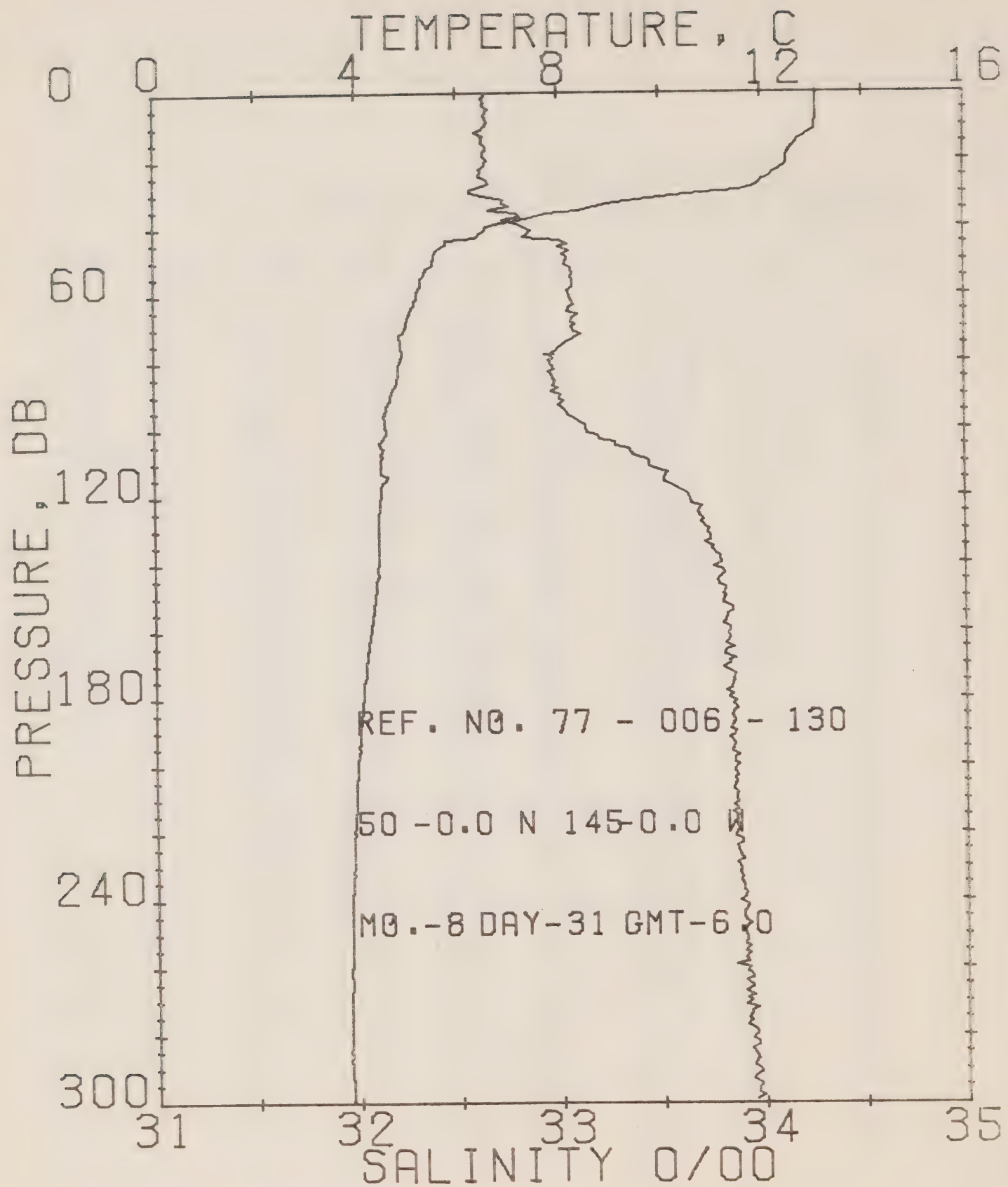
DATE 31/ 8/ 77

POSITION 30- .0N, 145- .0W

GMT 2.9

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	15.14	32.63	0	24.55	339.2	.00	.00	1498.
5	15.13	32.64	5	24.56	338.3	.17	.00	1498.
10	15.13	32.64	10	24.57	338.1	.34	.02	1499.
15	12.90	32.65	15	24.60	334.7	.51	.04	1498.
20	12.61	32.65	20	24.66	329.4	.67	.07	1497.
25	11.99	32.62	25	24.77	319.3	.84	.11	1495.
30	10.12	32.67	30	25.14	284.2	.99	.15	1488.
35	8.48	32.75	35	25.46	253.6	1.12	.19	1482.
40	7.29	32.64	40	25.70	230.6	1.24	.24	1478.
45	6.31	32.68	45	25.86	215.0	1.36	.29	1474.
50	5.70	32.69	50	25.95	206.9	1.46	.34	1472.
55	5.56	32.66	55	25.94	207.7	1.57	.39	1471.
60	5.28	32.69	60	25.99	202.8	1.67	.45	1470.
65	5.16	32.68	65	26.00	201.8	1.77	.52	1470.
70	5.05	32.91	70	26.03	199.0	1.87	.59	1470.
75	4.98	32.89	75	26.03	199.2	1.97	.68	1469.
80	4.95	32.91	80	26.05	197.8	2.07	.74	1469.
90	4.61	32.94	89	26.09	194.2	2.26	.91	1469.
100	4.69	32.99	99	26.14	188.7	2.46	1.10	1469.
110	4.63	33.13	109	26.26	177.7	2.64	1.29	1469.
120	4.57	33.34	119	26.43	161.7	2.81	1.49	1469.
130	4.52	33.57	129	26.61	144.4	2.97	1.69	1469.
140	4.46	33.76	139	26.77	129.6	3.10	1.87	1469.
150	4.41	33.78	149	26.79	127.6	3.23	2.07	1469.
160	4.33	33.82	159	26.84	123.8	3.36	2.27	1469.
170	4.21	33.82	169	26.85	122.8	3.48	2.47	1469.
180	4.19	33.85	179	26.88	120.0	3.60	2.69	1469.
190	4.11	33.84	189	26.88	119.7	3.72	2.92	1469.
200	4.06	33.83	199	26.87	120.6	3.84	3.15	1469.
210	4.05	33.87	209	26.91	117.3	3.96	3.40	1469.
220	3.99	33.86	213	26.90	117.6	4.08	3.65	1469.
230	3.92	33.89	228	26.93	114.7	4.19	3.92	1469.
240	3.88	33.89	233	26.94	114.0	4.31	4.20	1469.
250	3.84	33.90	248	26.95	113.5	4.42	4.45	1469.
260	3.85	33.91	258	26.96	112.5	4.53	4.70	1469.
270	3.80	33.90	268	26.95	113.6	4.65	5.00	1469.
280	3.84	33.94	273	26.98	110.8	4.76	5.35	1469.





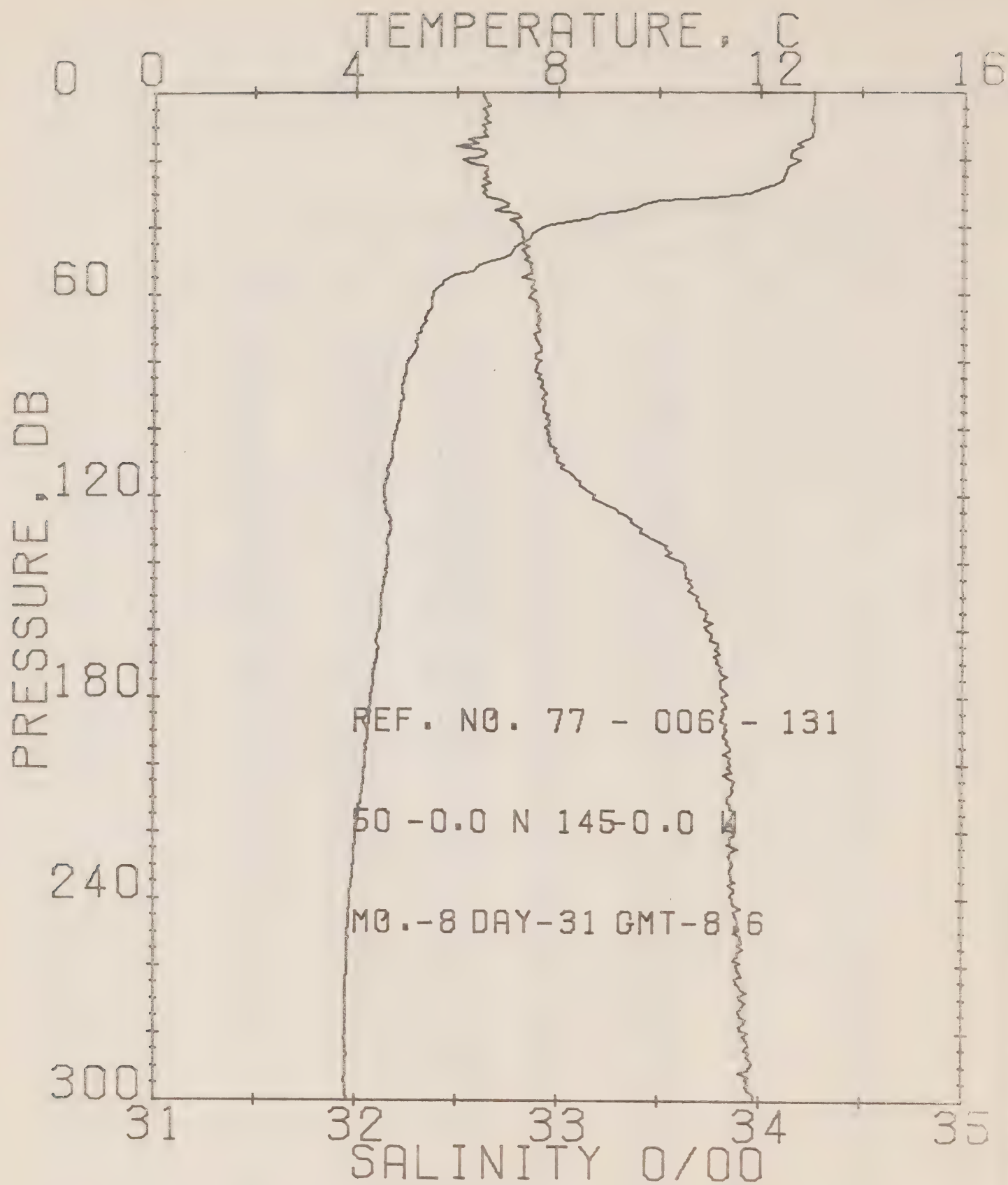
## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8-130

DATE 31/ 8/ 77

POSITION 50- 00N, 145- 00W SMT 6.1

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	13.09	32.64	0	24.57	337.4	.00	.00	1490.
5	13.09	32.66	5	24.58	336.4	.17	.00	1490.
10	13.07	32.65	10	24.58	336.8	.34	.02	1490.
15	12.70	32.63	15	24.64	331.4	.51	.04	1497.
20	12.51	32.55	20	24.69	326.0	.67	.07	1497.
25	12.17	32.61	25	24.75	323.1	.83	.11	1495.
30	10.91	32.57	30	24.92	304.8	.99	.15	1491.
35	8.40	32.67	35	25.41	258.3	1.13	.19	1482.
40	6.00	32.62	40	25.76	222.7	1.24	.24	1475.
45	5.79	33.04	45	26.06	196.8	1.35	.29	1472.
50	5.53	33.04	50	26.09	194.0	1.45	.35	1471.
55	5.30	33.06	55	26.15	189.9	1.54	.38	1471.
60	5.19	33.05	60	26.15	189.4	1.64	.44	1470.
65	5.06	33.04	65	26.14	189.1	1.73	.50	1470.
70	4.95	33.07	70	26.17	186.0	1.83	.55	1469.
75	4.68	33.03	75	26.15	188.1	1.92	.60	1469.
80	4.67	32.95	80	26.09	193.6	2.01	.71	1469.
90	4.66	33.00	89	26.10	187.6	2.21	.87	1463.
100	4.58	33.12	99	26.26	177.8	2.39	1.00	1468.
110	4.49	33.44	109	26.52	153.3	2.56	1.20	1469.
120	4.46	33.65	119	26.67	139.0	2.70	1.40	1469.
130	4.43	33.75	129	26.76	131.1	2.84	1.57	1469.
140	4.44	33.79	139	26.80	126.6	2.97	1.75	1469.
150	4.34	33.31	149	26.85	124.1	3.09	1.94	1469.
160	4.26	33.65	159	26.85	122.0	3.22	2.10	1469.
170	4.17	33.64	169	26.87	120.8	3.34	2.34	1469.
180	4.10	33.62	179	26.87	121.0	3.46	2.55	1469.
190	4.03	33.65	189	26.89	118.2	3.58	2.75	1469.
200	3.99	33.37	199	26.91	116.5	3.70	3.01	1469.
210	3.95	33.66	208	26.91	117.0	3.81	3.20	1469.
220	3.91	33.66	218	26.91	116.7	3.93	3.51	1469.
230	3.89	33.67	228	26.92	115.7	4.05	3.75	1469.
240	3.84	33.68	238	26.94	114.6	4.16	4.05	1469.
250	3.84	33.90	248	26.95	113.4	4.27	4.35	1469.
260	3.82	33.91	258	26.96	112.5	4.39	4.65	1469.
270	3.81	33.93	268	26.97	111.3	4.50	4.95	1469.
280	3.81	33.95	278	27.00	109.1	4.61	5.24	1469.
290	3.80	33.96	288	27.01	108.6	4.72	5.55	1469.
300	3.84	33.99	298	27.02	107.0	4.83	5.85	1470.



## OFFSHORE OCEANOGRAPHY GROUP

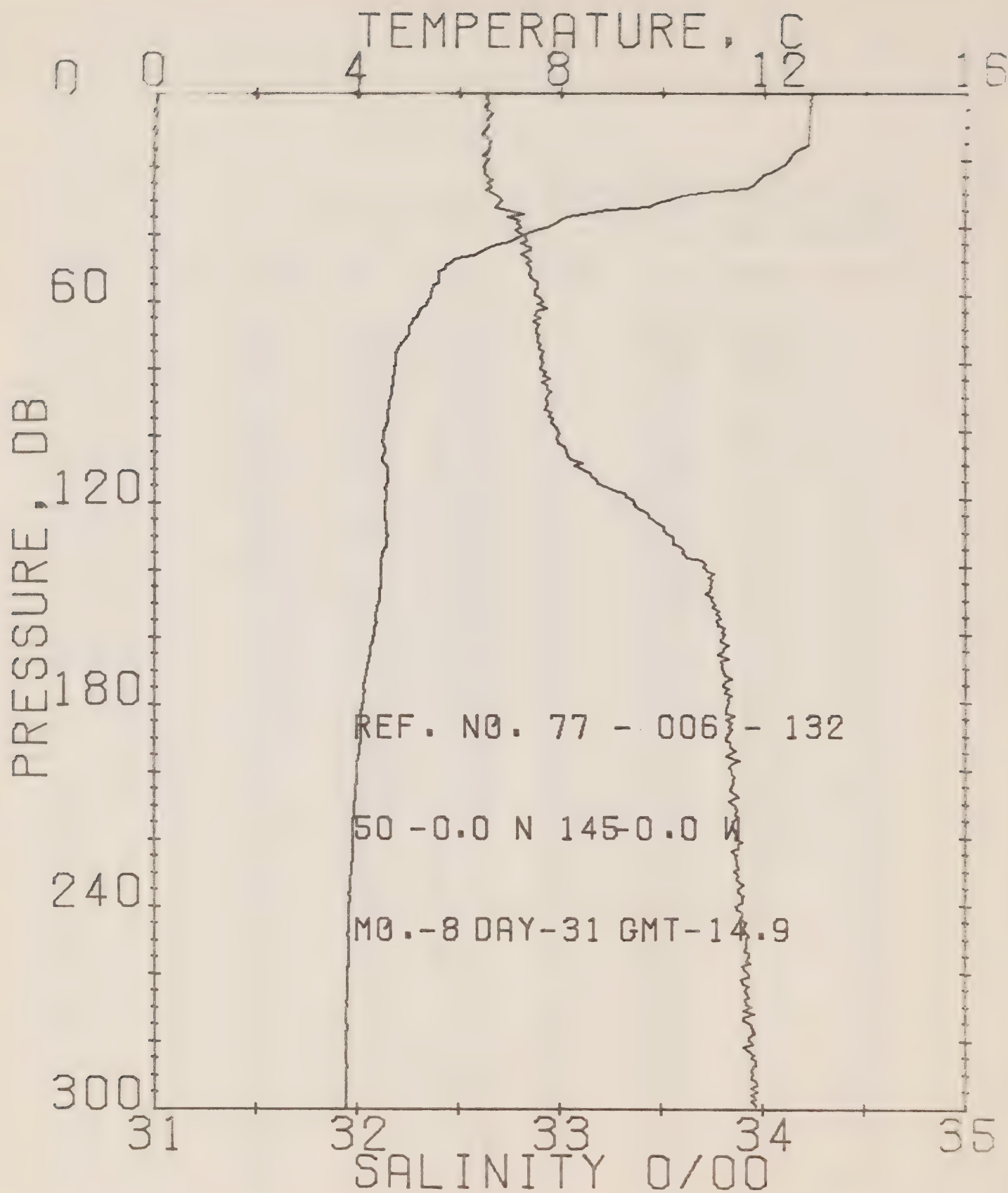
REFERENCE NO. 77-6-131

DATE 31/ 8/77

POSITION 50- .0N, 145- .0W GMT 8.6

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	13.05	32.62	0	24.57	337.9	.00	.00	1498.
5	13.03	32.63	5	24.58	337.1	.17	.00	1498.
10	13.04	32.62	10	24.57	337.9	.34	.02	1498.
15	12.75	32.59	15	24.60	335.0	.51	.04	1497.
20	12.76	32.53	20	24.55	339.8	.67	.07	1497.
25	12.45	32.64	25	24.70	325.9	.84	.11	1496.
30	11.77	32.63	30	24.81	315.1	1.00	.15	1494.
35	9.32	32.69	35	25.29	270.0	1.14	.20	1485.
40	7.69	32.60	40	25.62	238.5	1.27	.25	1480.
45	7.20	32.63	45	25.71	230.1	1.38	.30	1478.
50	6.69	32.63	50	25.78	223.2	1.50	.35	1476.
55	5.63	32.62	55	25.88	213.6	1.60	.41	1472.
60	5.51	32.67	60	25.95	206.6	1.71	.47	1471.
65	5.42	32.69	65	25.98	203.9	1.81	.54	1471.
70	5.29	32.90	70	26.00	202.0	1.91	.61	1471.
75	5.19	32.90	75	26.02	200.8	2.01	.66	1470.
80	5.02	32.91	80	26.04	198.4	2.11	.70	1470.
90	4.92	32.94	89	26.06	195.1	2.31	.90	1469.
100	4.81	32.94	99	26.09	194.2	2.51	1.12	1469.
110	4.70	32.99	109	26.14	189.1	2.70	1.32	1469.
120	4.57	33.18	119	26.30	174.0	2.88	1.54	1469.
130	4.68	33.41	129	26.47	157.7	3.04	1.75	1470.
140	4.61	33.62	139	26.65	141.5	3.19	1.95	1470.
150	4.50	33.69	149	26.72	135.0	3.33	2.10	1470.
160	4.45	33.73	159	26.76	131.4	3.47	2.37	1470.
170	4.38	33.79	169	26.81	126.6	3.59	2.56	1470.
180	4.28	33.82	179	26.84	123.6	3.72	2.81	1469.
190	4.25	33.84	189	26.86	121.9	3.84	3.04	1469.
200	4.18	33.86	199	26.88	119.8	3.96	3.26	1469.
210	4.10	33.84	209	26.86	119.9	4.08	3.50	1469.
220	4.00	33.87	218	26.91	117.3	4.20	3.79	1469.
230	3.96	33.87	228	26.91	116.8	4.32	4.06	1469.
240	3.90	33.86	238	26.92	116.6	4.43	4.34	1469.
250	3.85	33.88	248	26.93	115.0	4.55	4.62	1469.
260	3.83	33.89	258	26.94	114.2	4.66	4.92	1469.
270	3.81	33.91	268	26.96	112.4	4.78	5.20	1469.
280	3.81	33.94	278	26.99	110.1	4.89	5.54	1469.
290	3.81	33.95	288	27.00	109.3	5.00	5.86	1469.
300	3.83	33.97	298	27.01	108.1	5.11	6.19	1470.





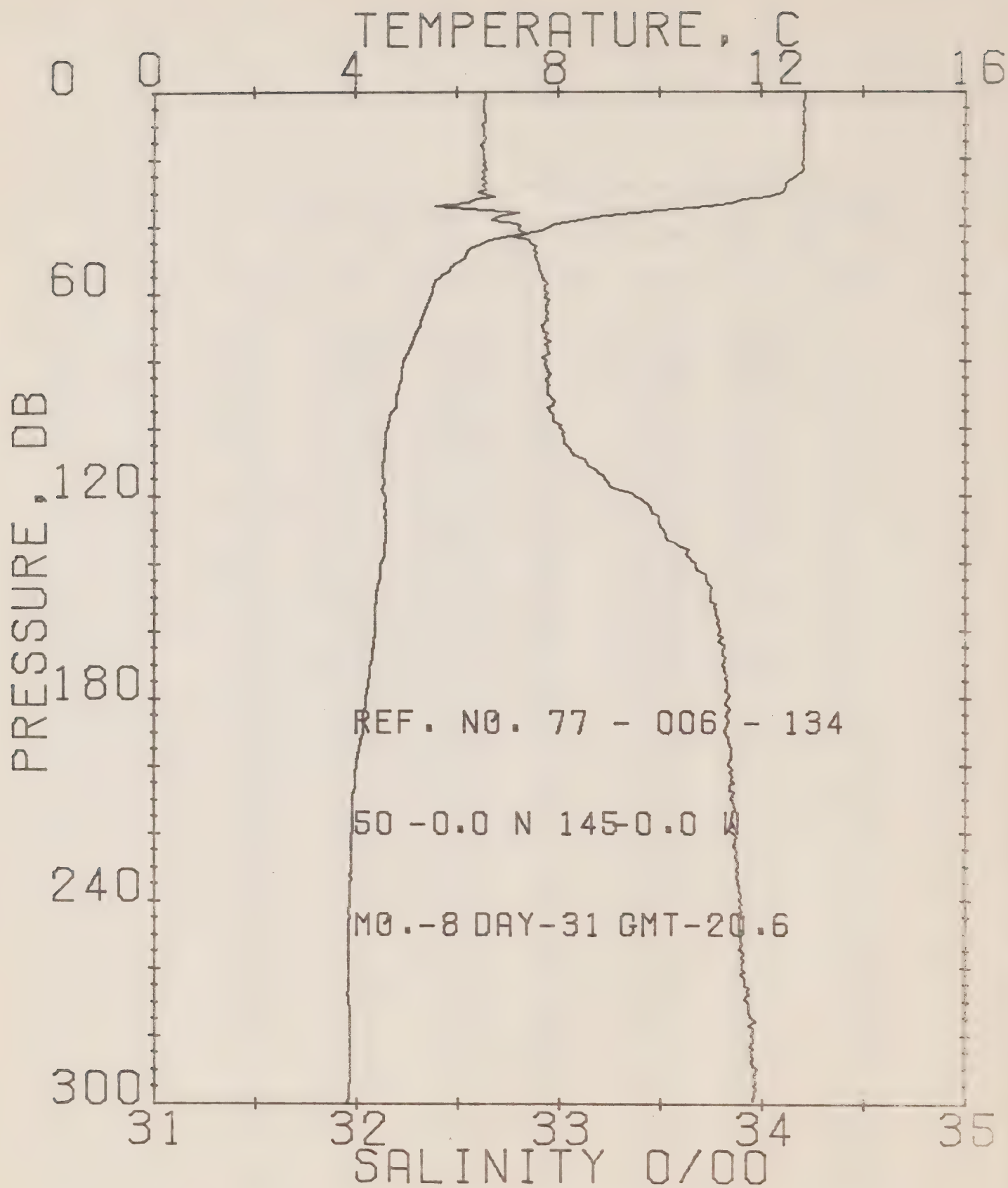
## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 17- 6-132

DATE 31/ 8/77

POSITION 50- 00N, 145- 00W GMT 14.9

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. m	SOUND
0	12.94	32.65	0	24.60	335.3	.00	.00	1498.
5	12.91	32.64	5	24.60	334.6	.17	.00	1498.
10	12.91	32.65	10	24.61	333.8	.33	.02	1498.
15	12.91	32.65	15	24.62	333.6	.50	.04	1498.
20	12.50	32.64	20	24.69	326.9	.67	.07	1497.
25	11.95	32.67	25	24.82	314.8	.83	.10	1495.
30	10.45	32.70	30	25.10	287.4	.98	.15	1496.
35	8.49	32.62	35	25.51	248.4	1.12	.19	1483.
40	7.52	32.76	40	25.60	237.5	1.24	.24	1479.
45	6.59	32.65	45	25.81	220.5	1.35	.29	1475.
50	5.79	32.64	50	25.90	211.9	1.46	.34	1472.
55	5.62	32.65	55	25.95	206.8	1.57	.40	1472.
60	5.44	32.90	60	25.96	203.9	1.67	.46	1471.
65	5.19	32.68	65	26.00	202.3	1.77	.52	1470.
70	5.03	32.69	70	26.02	200.1	1.87	.59	1469.
75	4.80	32.90	75	26.06	196.5	1.97	.66	1469.
80	4.75	32.91	80	26.07	195.3	2.07	.74	1469.
90	4.66	32.94	89	26.10	192.6	2.26	.91	1463.
100	4.53	33.00	99	26.16	186.9	2.45	1.09	1466.
110	4.62	33.03	109	26.22	181.5	2.64	1.25	1469.
120	4.56	33.33	119	26.45	160.3	2.81	1.49	1469.
130	4.60	33.33	129	26.56	148.0	2.96	1.69	1470.
140	4.48	33.70	139	26.73	133.5	3.10	1.86	1469.
150	4.43	33.75	149	26.77	130.0	3.23	2.07	1469.
160	4.33	33.61	159	26.83	124.2	3.36	2.26	1469.
170	4.19	33.30	169	26.84	123.5	3.48	2.46	1469.
180	4.11	33.63	179	26.87	120.7	3.61	2.70	1469.
190	4.07	33.63	189	26.87	120.8	3.73	2.90	1469.
200	4.00	33.64	199	26.89	118.6	3.84	3.10	1469.
210	3.95	33.65	209	26.90	117.7	3.96	3.41	1469.
220	3.92	33.67	216	26.92	116.3	4.08	3.67	1469.
230	3.88	33.66	226	26.91	116.7	4.19	3.90	1469.
240	3.85	33.68	236	26.93	115.2	4.31	4.21	1469.
250	3.84	33.92	248	26.97	111.7	4.42	4.49	1469.
260	3.81	33.93	256	26.98	110.9	4.53	4.76	1469.
270	3.80	33.94	266	26.99	110.0	4.65	5.06	1469.
280	3.79	33.94	276	26.98	110.4	4.76	5.39	1469.
290	3.60	33.95	286	27.00	109.2	4.87	5.71	1469.
300	3.78	33.96	296	27.01	108.6	4.97	6.00	1469.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8-134

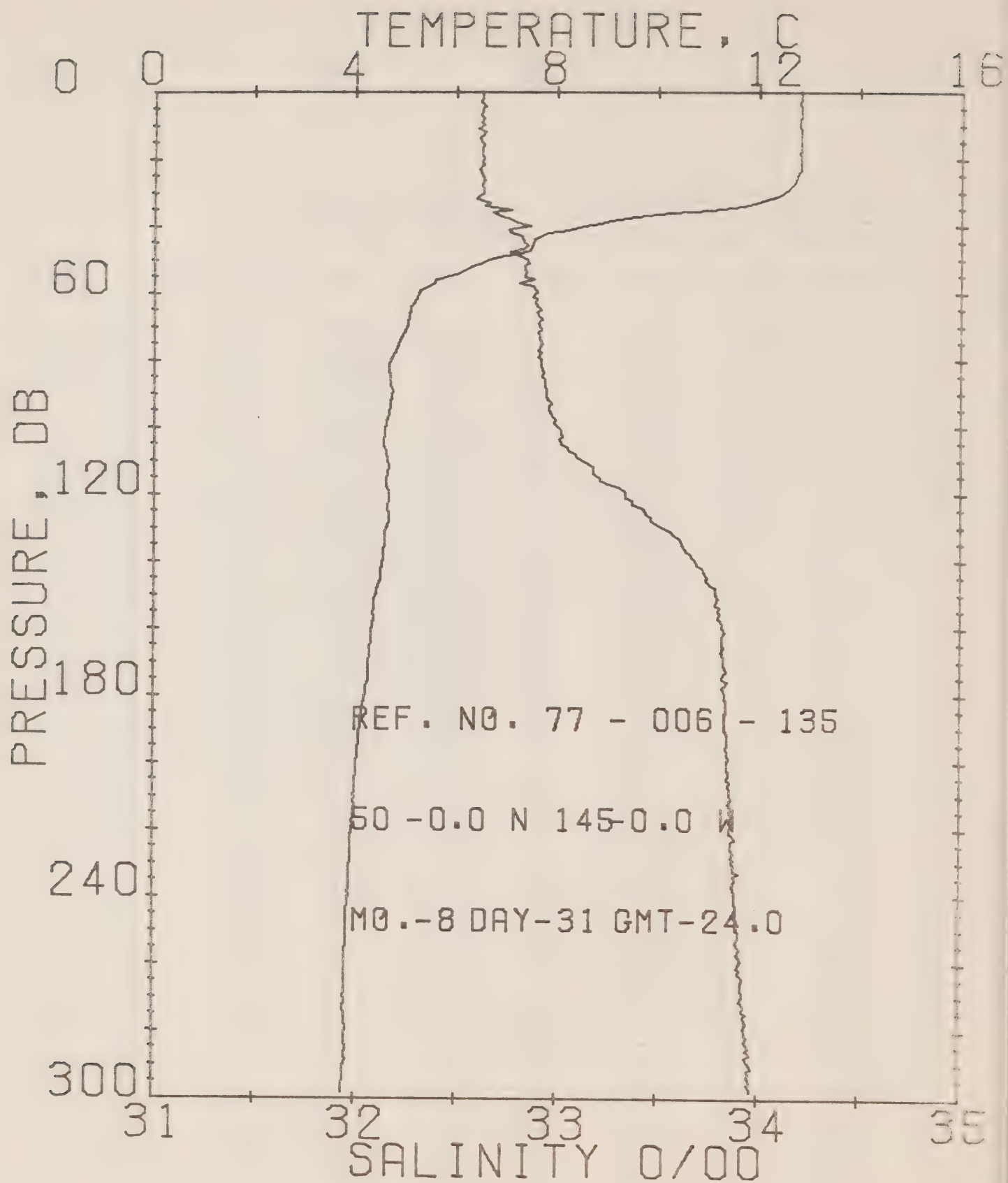
DATE 31/ 8/77

POSITION 50- 00N, 145- 00W

GMT 20.7

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA J	POT. EN	SOUND
0	12.65	32.64	0	24.62	332.8	.00	.00	1497.
5	12.64	32.64	5	24.62	333.3	.17	.00	1497.
10	12.64	32.63	10	24.61	333.9	.33	.02	1498.
15	12.64	32.63	15	24.62	333.5	.50	.04	1498.
20	12.63	32.63	20	24.62	333.5	.67	.07	1498.
25	12.68	32.64	25	24.65	330.6	.83	.11	1497.
30	12.41	32.61	30	24.66	327.7	1.00	.15	1496.
35	10.15	32.60	35	25.06	290.1	1.15	.20	1488.
40	7.64	32.62	40	25.61	239.5	1.28	.25	1466.
45	6.50	32.66	45	25.85	218.5	1.40	.30	1475.
50	6.09	32.69	50	25.90	211.7	1.51	.35	1473.
55	5.65	32.92	55	25.96	204.3	1.61	.41	1472.
60	5.49	32.95	60	26.02	200.6	1.71	.47	1471.
65	5.37	32.94	65	26.02	200.0	1.81	.50	1471.
70	5.24	32.92	70	26.03	199.9	1.91	.56	1470.
75	5.09	32.94	75	26.06	196.9	2.01	.67	1470.
80	4.93	32.94	80	26.07	195.3	2.11	.75	1469.
90	4.80	32.95	89	26.09	193.5	2.30	.92	1469.
100	4.62	33.01	99	26.16	186.9	2.49	1.11	1468.
110	4.55	33.13	109	26.27	177.1	2.67	1.30	1468.
120	4.58	33.37	119	26.45	159.5	2.84	1.50	1469.
130	4.57	33.51	129	26.57	148.8	3.00	1.69	1469.
140	4.48	33.67	139	26.70	136.0	3.14	1.89	1469.
150	4.40	33.75	149	26.77	129.7	3.27	2.09	1469.
160	4.38	33.80	159	26.81	125.9	3.40	2.29	1469.
170	4.27	33.81	169	26.84	123.7	3.52	2.50	1469.
180	4.19	33.84	179	26.86	121.2	3.65	2.72	1469.
190	4.12	33.82	189	26.86	122.1	3.77	2.94	1469.
200	3.99	33.84	199	26.88	119.3	3.89	3.16	1469.
210	3.93	33.85	209	26.90	117.6	4.01	3.40	1468.
220	3.91	33.85	219	26.91	117.4	4.12	3.69	1469.
230	3.88	33.88	228	26.93	114.9	4.24	3.95	1469.
240	3.86	33.89	238	26.94	114.3	4.35	4.20	1469.
250	3.84	33.89	248	26.94	114.4	4.47	4.51	1469.
260	3.83	33.90	258	26.95	113.4	4.58	4.81	1469.
270	3.84	33.93	268	26.97	111.3	4.69	5.11	1469.
280	3.87	33.95	278	26.99	110.1	4.80	5.42	1469.
290	3.86	33.97	288	27.00	108.7	4.91	5.74	1470.
300	3.80	33.95	298	27.00	109.4	5.02	6.07	1470.





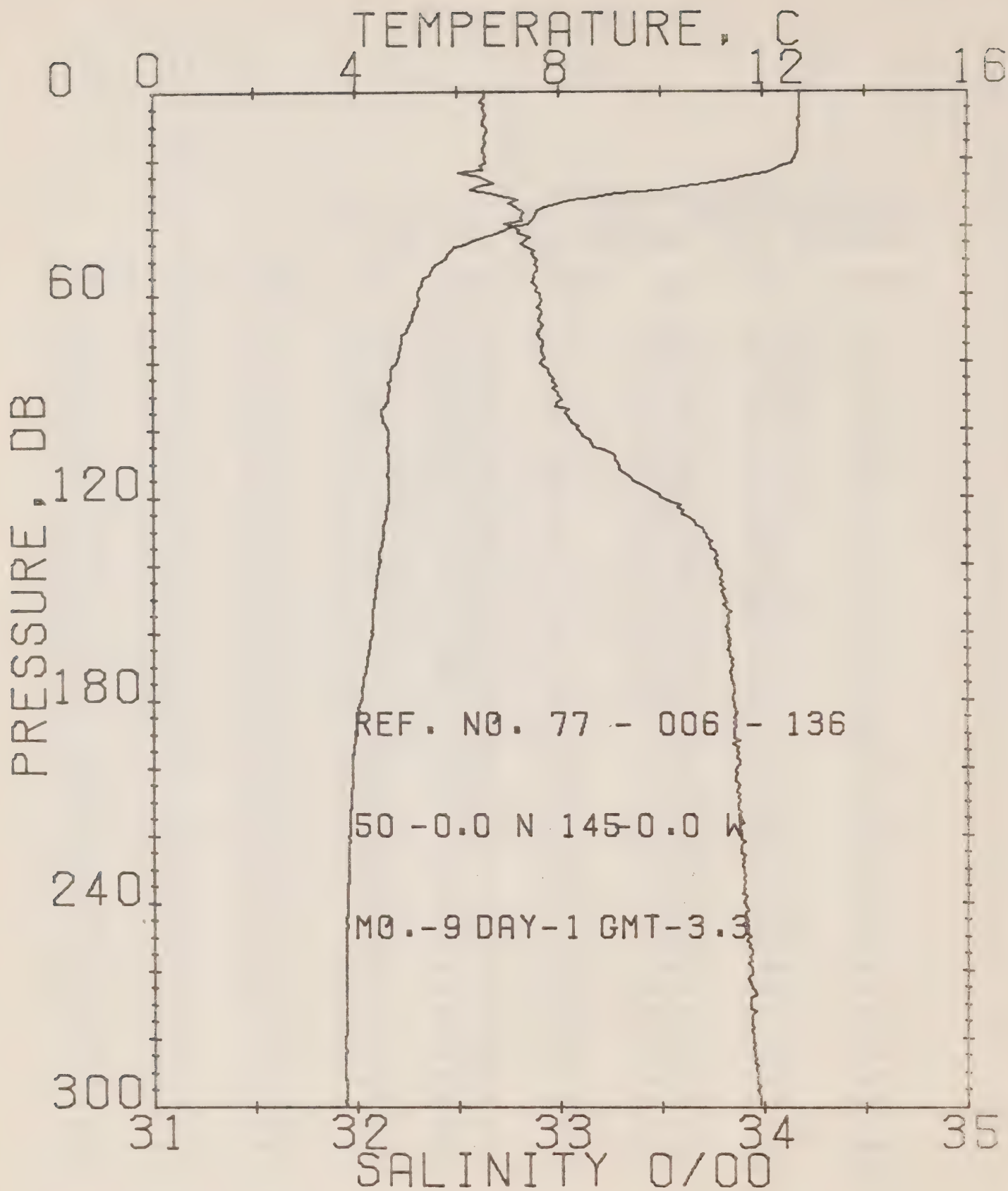
## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6-135

DATE 31/ 8/77

POSITION 50- .0N, 145- .0W GMT 24.0

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.82	32.63	0	24.61	333.4	.00	.00	1497.
5	12.82	32.63	5	24.62	333.4	.17	.00	1497.
10	12.81	32.63	10	24.62	333.0	.33	.02	1497.
15	12.82	32.62	15	24.61	334.0	.50	.04	1498.
20	12.81	32.63	20	24.62	333.5	.67	.07	1498.
25	12.74	32.63	25	24.63	332.6	.83	.11	1497.
30	12.48	32.64	30	24.69	327.2	1.00	.15	1497.
35	11.09	32.76	35	25.04	293.6	1.16	.21	1492.
40	8.53	32.86	40	25.54	245.8	1.29	.26	1483.
45	7.53	32.84	45	25.67	233.7	1.41	.31	1479.
50	6.65	32.85	50	25.80	221.7	1.53	.36	1476.
55	5.80	32.84	55	25.90	212.0	1.64	.42	1472.
60	5.26	32.90	60	26.01	201.6	1.74	.48	1470.
65	5.08	32.92	65	26.04	198.3	1.84	.55	1470.
70	5.01	32.91	70	26.05	197.8	1.94	.62	1469.
75	4.84	32.93	75	26.08	195.0	2.04	.69	1469.
80	4.69	32.92	80	26.09	194.0	2.14	.77	1468.
90	4.73	32.95	89	26.11	192.4	2.33	.95	1469.
100	4.59	33.00	99	26.16	187.4	2.52	1.12	1468.
110	4.64	33.12	109	26.25	178.9	2.70	1.31	1469.
120	4.66	33.34	119	26.42	162.7	2.88	1.51	1469.
130	4.61	33.52	129	26.57	149.0	3.03	1.71	1470.
140	4.54	33.69	139	26.71	135.5	3.17	1.91	1470.
150	4.40	33.79	149	26.80	126.8	3.30	2.10	1469.
160	4.33	33.82	159	26.84	123.5	3.43	2.30	1469.
170	4.27	33.82	169	26.85	122.7	3.55	2.51	1469.
180	4.19	33.83	179	26.86	121.3	3.67	2.72	1469.
190	4.08	33.83	189	26.87	120.3	3.79	2.95	1469.
200	4.04	33.85	199	26.89	118.9	3.91	3.19	1469.
210	3.99	33.86	209	26.90	117.6	4.03	3.43	1469.
220	3.94	33.86	218	26.91	117.1	4.15	3.69	1469.
230	3.90	33.88	228	26.93	115.6	4.27	3.96	1469.
240	3.87	33.89	238	26.94	114.6	4.38	4.23	1469.
250	3.83	33.90	248	26.95	113.1	4.49	4.52	1469.
260	3.82	33.91	258	26.96	112.2	4.61	4.81	1469.
270	3.80	33.93	268	26.98	111.0	4.72	5.11	1469.
280	3.82	33.94	278	26.98	110.4	4.83	5.42	1469.
290	3.80	33.96	288	27.00	109.0	4.94	5.74	1469.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8-136

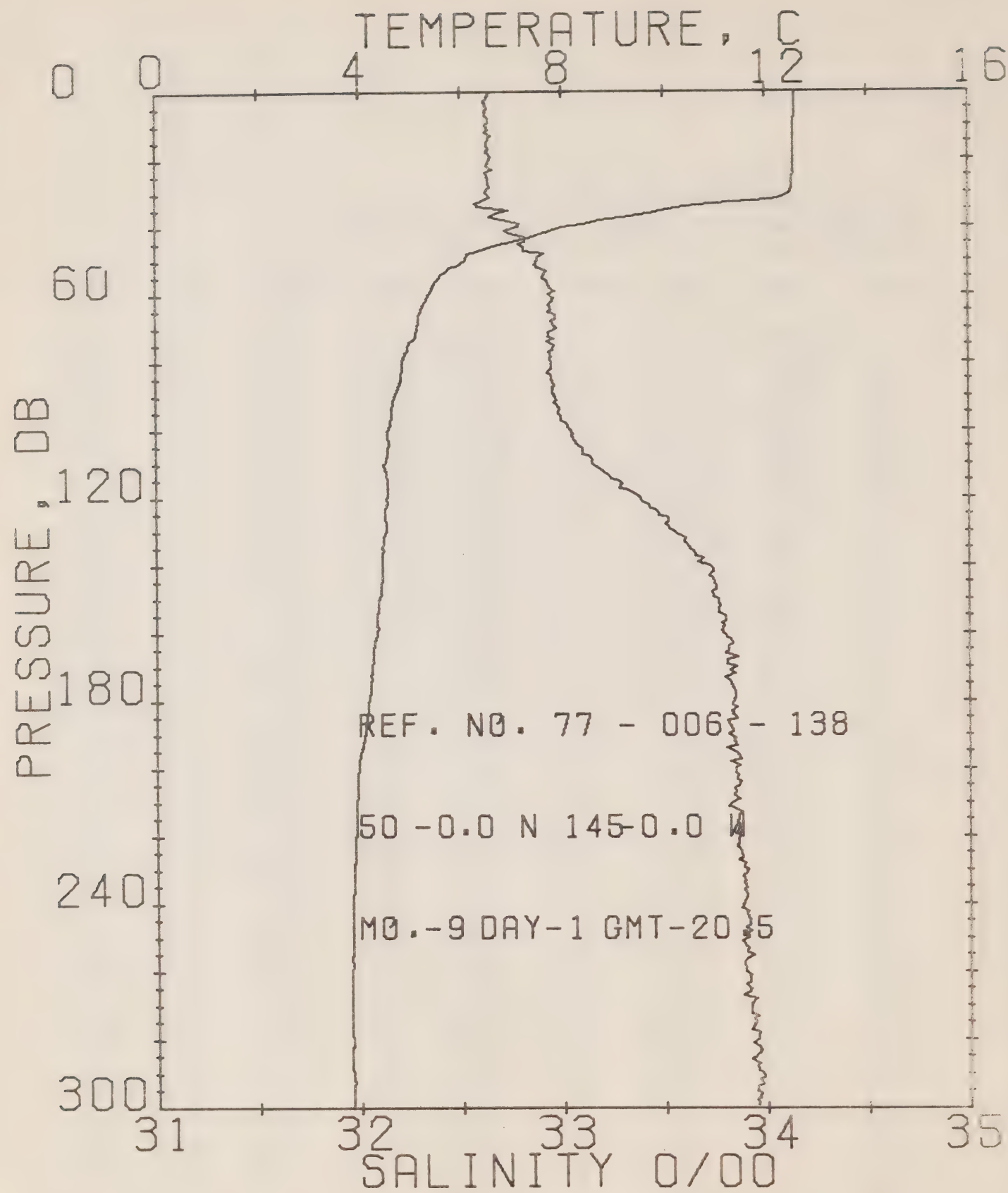
DATE 1/ 9/77

POSITION 50- .0N, 145- .0W

GMT 3.3

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.72	32.83	0	24.64	331.0	.00	.00	1497.
5	12.72	32.83	5	24.63	331.8	.17	.00	1497.
10	12.72	32.83	10	24.63	331.8	.33	.02	1497.
15	12.70	32.84	15	24.63	330.7	.50	.04	1497.
20	12.62	32.84	20	24.62	329.6	.66	.07	1497.
25	11.62	32.80	25	24.62	314.3	.82	.10	1494.
30	9.23	32.85	30	25.26	272.0	.97	.15	1483.
35	7.59	32.81	35	25.64	236.5	1.10	.19	1479.
40	7.08	32.78	40	25.66	232.1	1.21	.23	1477.
45	6.15	32.82	45	25.84	217.7	1.33	.26	1474.
50	5.71	32.89	50	25.95	207.1	1.43	.33	1472.
55	5.55	32.88	55	25.98	203.9	1.53	.39	1471.
60	5.23	32.90	60	26.01	200.9	1.64	.45	1470.
65	5.16	32.91	65	26.03	199.6	1.74	.51	1470.
70	5.01	32.91	70	26.04	198.2	1.84	.58	1469.
75	4.88	32.92	75	26.07	196.0	1.93	.65	1469.
80	4.79	32.91	80	26.07	195.7	2.03	.73	1469.
90	4.65	33.00	89	26.15	188.0	2.22	.89	1468.
100	4.63	33.09	99	26.23	180.9	2.41	1.07	1469.
110	4.64	33.29	109	26.38	166.3	2.58	1.26	1469.
120	4.65	33.49	119	26.54	151.1	2.74	1.45	1470.
130	4.54	33.71	129	26.72	134.0	2.88	1.65	1469.
140	4.44	33.77	139	26.79	128.3	3.01	1.81	1469.
150	4.35	33.81	149	26.83	124.6	3.14	1.99	1469.
160	4.31	33.82	159	26.84	123.1	3.26	2.19	1469.
170	4.18	33.84	169	26.87	120.3	3.39	2.39	1469.
180	4.08	33.85	179	26.88	119.1	3.50	2.61	1469.
190	3.97	33.85	189	26.90	117.7	3.62	2.85	1468.
200	3.92	33.87	199	26.92	116.0	3.74	3.06	1468.
210	3.89	33.88	208	26.93	115.1	3.86	3.36	1468.
220	3.85	33.89	218	26.94	114.4	3.97	3.55	1468.
230	3.83	33.90	228	26.95	113.0	4.09	3.81	1468.
240	3.81	33.90	233	26.95	112.9	4.20	4.06	1469.
250	3.80	33.93	248	26.98	110.6	4.31	4.38	1469.
260	3.79	33.94	258	26.99	109.8	4.42	4.68	1469.
270	3.79	33.94	268	26.98	110.3	4.53	4.95	1469.
280	3.77	33.95	278	26.99	109.3	4.64	5.25	1469.
290	3.77	33.96	288	27.01	108.2	4.75	5.57	1469.
300	3.79	33.96	298	27.02	107.1	4.85	5.89	1469.





## OFFSHORE OCEANOGRAPHY GROUP

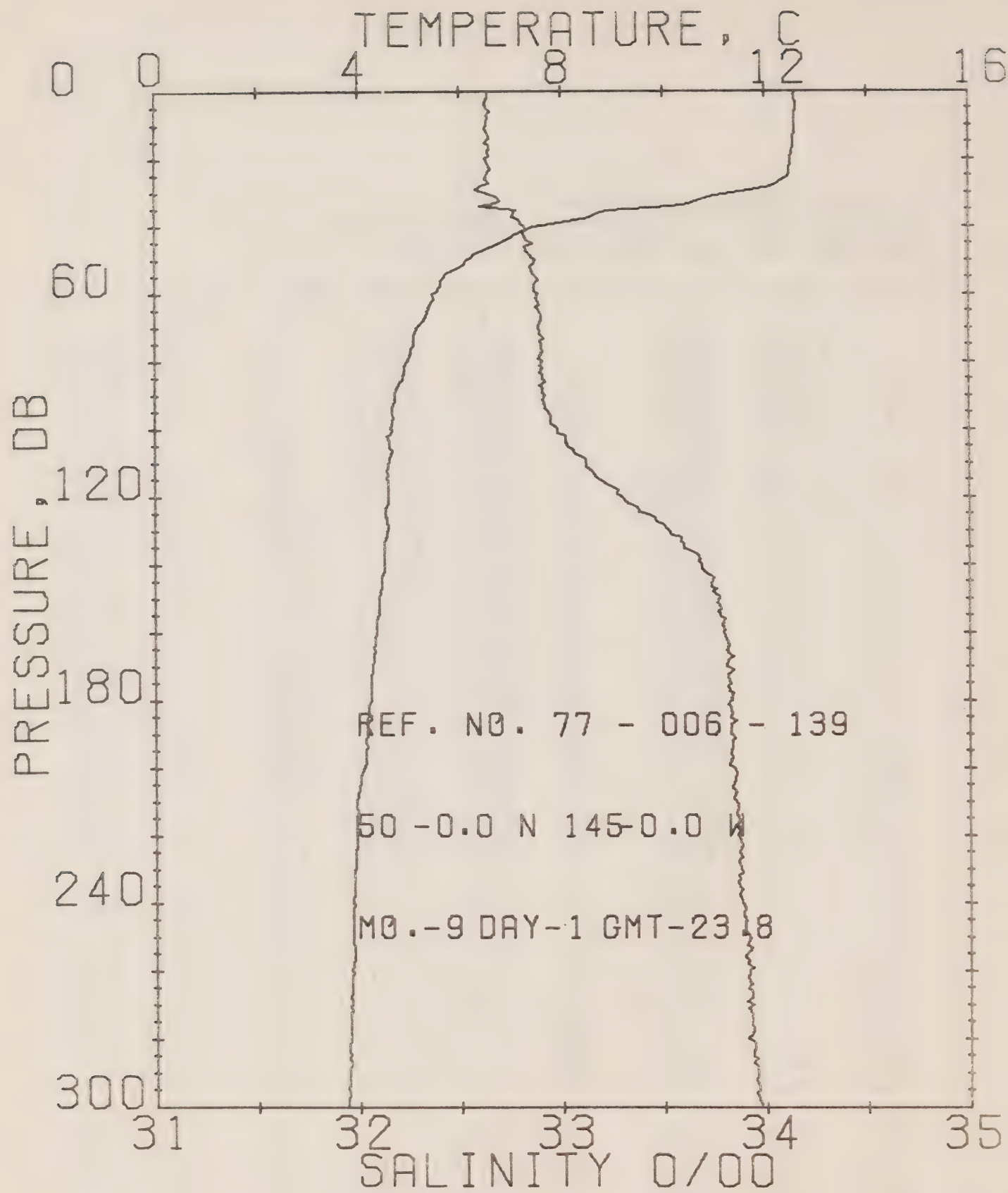
REFERENCE NO. 17- 8-138

DATE 1/ 9/77

POSITION 50- .0N, 145- .0W

GMT 20.5

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.59	32.64	0	24.67	328.3	.00	.00	1497.
5	12.59	32.63	5	24.66	328.7	.16	.00	1497.
10	12.56	32.63	10	24.67	328.6	.33	.02	1497.
15	12.57	32.63	15	24.66	328.9	.49	.04	1497.
20	12.56	32.64	20	24.68	327.7	.66	.07	1497.
25	12.54	32.64	25	24.67	328.3	.82	.10	1497.
30	12.48	32.63	30	24.68	327.8	.98	.15	1497.
35	10.02	32.72	35	25.19	279.2	1.14	.20	1488.
40	8.06	32.78	40	25.55	244.9	1.27	.25	1481.
45	6.77	32.79	45	25.73	227.6	1.39	.30	1476.
50	6.07	32.88	50	25.90	212.0	1.50	.36	1473.
55	5.56	32.91	55	25.98	204.5	1.60	.41	1471.
60	5.38	32.94	60	26.03	199.8	1.70	.47	1471.
65	5.21	32.94	65	26.04	198.3	1.80	.53	1470.
70	5.14	32.97	70	26.08	195.0	1.90	.60	1470.
75	4.96	32.96	75	26.09	193.8	2.00	.67	1469.
80	4.85	32.95	80	26.09	193.8	2.10	.75	1469.
90	4.69	32.96	89	26.12	191.1	2.29	.92	1468.
100	4.57	33.04	99	26.19	184.1	2.48	1.10	1468.
110	4.49	33.15	109	26.29	175.3	2.66	1.29	1468.
120	4.53	33.38	119	26.47	158.2	2.83	1.49	1469.
130	4.54	33.55	129	26.60	146.1	2.98	1.68	1469.
140	4.46	33.71	139	26.74	132.7	3.12	1.87	1469.
150	4.38	33.77	149	26.79	128.1	3.25	2.07	1469.
160	4.34	33.79	159	26.81	126.2	3.37	2.27	1469.
170	4.24	33.85	169	26.87	120.3	3.50	2.47	1469.
180	4.17	33.84	179	26.87	120.6	3.62	2.69	1469.
190	4.08	33.82	189	26.86	121.5	3.74	2.92	1469.
200	3.97	33.85	199	26.89	118.3	3.86	3.15	1468.
210	3.93	33.84	209	26.89	118.8	3.98	3.40	1468.
220	3.90	33.87	218	26.92	116.2	4.09	3.66	1469.
230	3.87	33.91	228	26.95	113.1	4.21	3.92	1469.
240	3.84	33.88	238	26.94	114.5	4.32	4.19	1469.
250	3.84	33.91	248	26.96	112.7	4.44	4.48	1469.
260	3.82	33.89	258	26.95	113.7	4.55	4.77	1469.
270	3.82	33.92	268	26.97	111.9	4.66	5.08	1469.
280	3.84	33.95	278	26.99	109.7	4.77	5.39	1469.
290	3.83	33.97	288	27.01	108.2	4.88	5.70	1470.
300	3.83	33.95	298	26.99	109.8	4.99	6.03	1470.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8-139

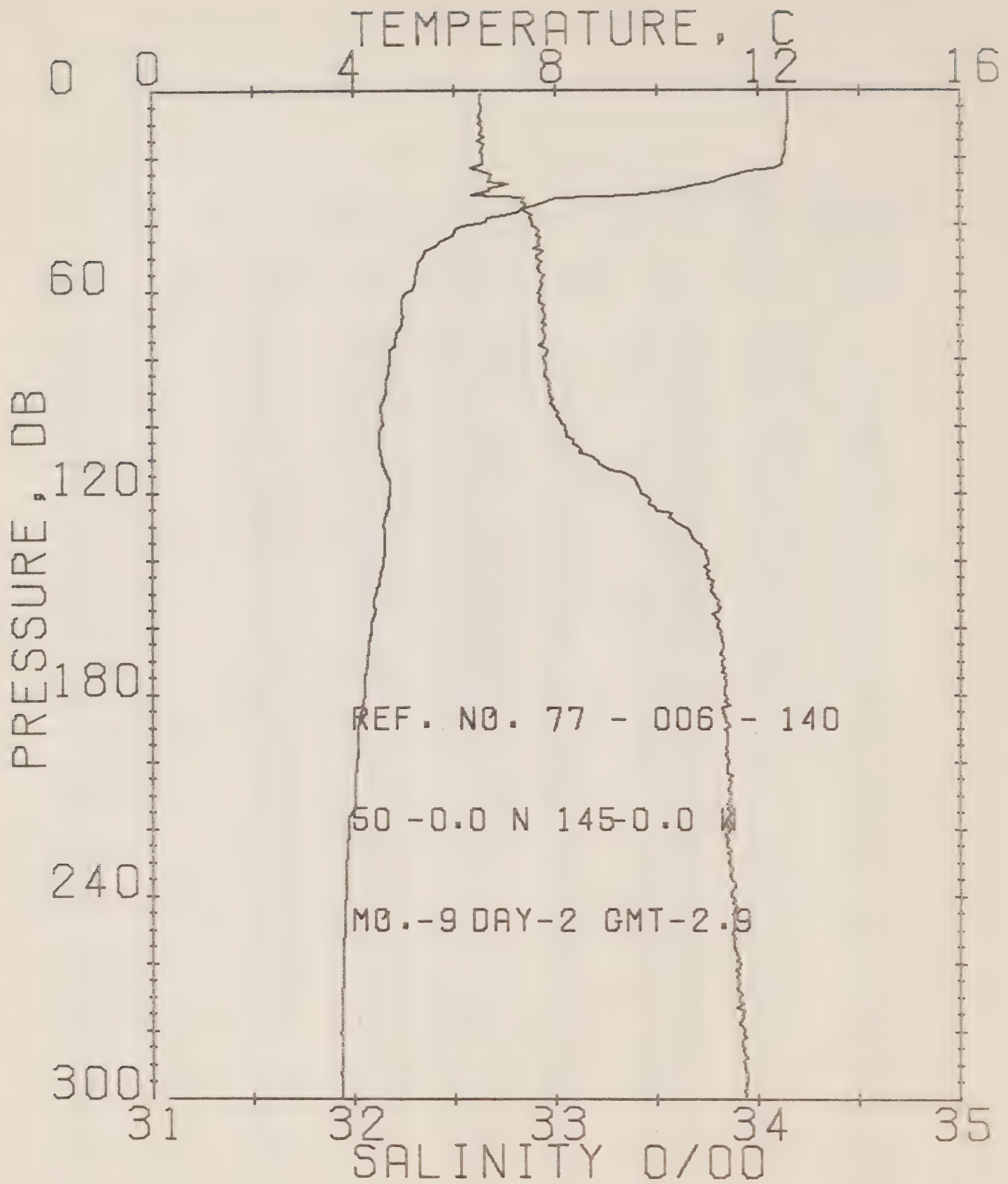
DATE 1/ 9/77

POSITION 50- .0N, 145- .0W

GMT 23.8

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.00	32.04	0	24.66	328.5	.00	.00	1497.
5	12.01	32.04	5	24.66	328.9	.16	.00	1497.
10	12.09	32.03	10	24.66	329.1	.33	.02	1497.
15	12.06	32.03	15	24.67	328.8	.49	.04	1497.
20	12.01	32.03	20	24.68	327.8	.66	.07	1497.
25	12.40	32.03	25	24.69	326.8	.82	.10	1496.
30	11.31	32.02	30	24.89	307.3	.98	.15	1493.
35	9.01	32.76	35	25.39	260.1	1.13	.20	1484.
40	7.45	32.82	40	25.66	234.3	1.25	.24	1479.
45	6.75	32.85	45	25.79	222.5	1.36	.29	1475.
50	6.12	32.87	50	25.88	213.3	1.47	.35	1474.
55	5.69	32.88	55	25.94	208.1	1.58	.40	1472.
60	5.48	32.88	60	25.97	205.4	1.68	.46	1471.
65	5.36	32.89	65	25.99	203.1	1.79	.53	1471.
70	5.16	32.89	70	26.01	201.3	1.89	.60	1470.
75	5.09	32.90	75	26.03	200.0	1.99	.67	1470.
80	4.95	32.90	80	26.05	198.1	2.09	.75	1469.
90	4.72	32.92	89	26.08	194.4	2.28	.92	1469.
100	4.66	32.98	99	26.14	189.5	2.48	1.11	1469.
110	4.59	33.12	109	26.25	178.4	2.66	1.31	1469.
120	4.59	33.29	119	26.39	165.4	2.83	1.51	1469.
130	4.57	33.52	129	26.58	148.1	2.99	1.71	1469.
140	4.51	33.68	139	26.71	135.4	3.13	1.90	1470.
150	4.40	33.77	149	26.79	127.9	3.26	2.09	1469.
160	4.34	33.79	159	26.82	125.6	3.39	2.30	1469.
170	4.27	33.81	169	26.83	124.1	3.51	2.50	1469.
180	4.23	33.83	179	26.86	121.7	3.63	2.72	1469.
190	4.15	33.83	189	26.86	121.4	3.76	2.95	1469.
200	4.07	33.84	199	26.88	119.9	3.88	3.19	1469.
210	3.96	33.85	209	26.90	117.7	4.00	3.44	1469.
220	3.95	33.86	218	26.91	117.0	4.11	3.70	1469.
230	3.91	33.87	228	26.92	116.1	4.23	3.90	1469.
240	3.88	33.88	238	26.93	115.2	4.35	4.24	1469.
250	3.86	33.91	248	26.96	112.5	4.46	4.53	1469.
260	3.85	33.91	258	26.96	112.6	4.57	4.82	1469.
270	3.83	33.93	268	26.97	111.2	4.68	5.12	1469.
280	3.81	33.91	278	26.96	112.5	4.80	5.43	1469.
290	3.78	33.95	288	27.00	109.1	4.91	5.75	1469.
300	3.76	33.96	298	27.01	108.4	5.01	6.08	1469.





## OFFSHORE OCEANOGRAPHY GROUP

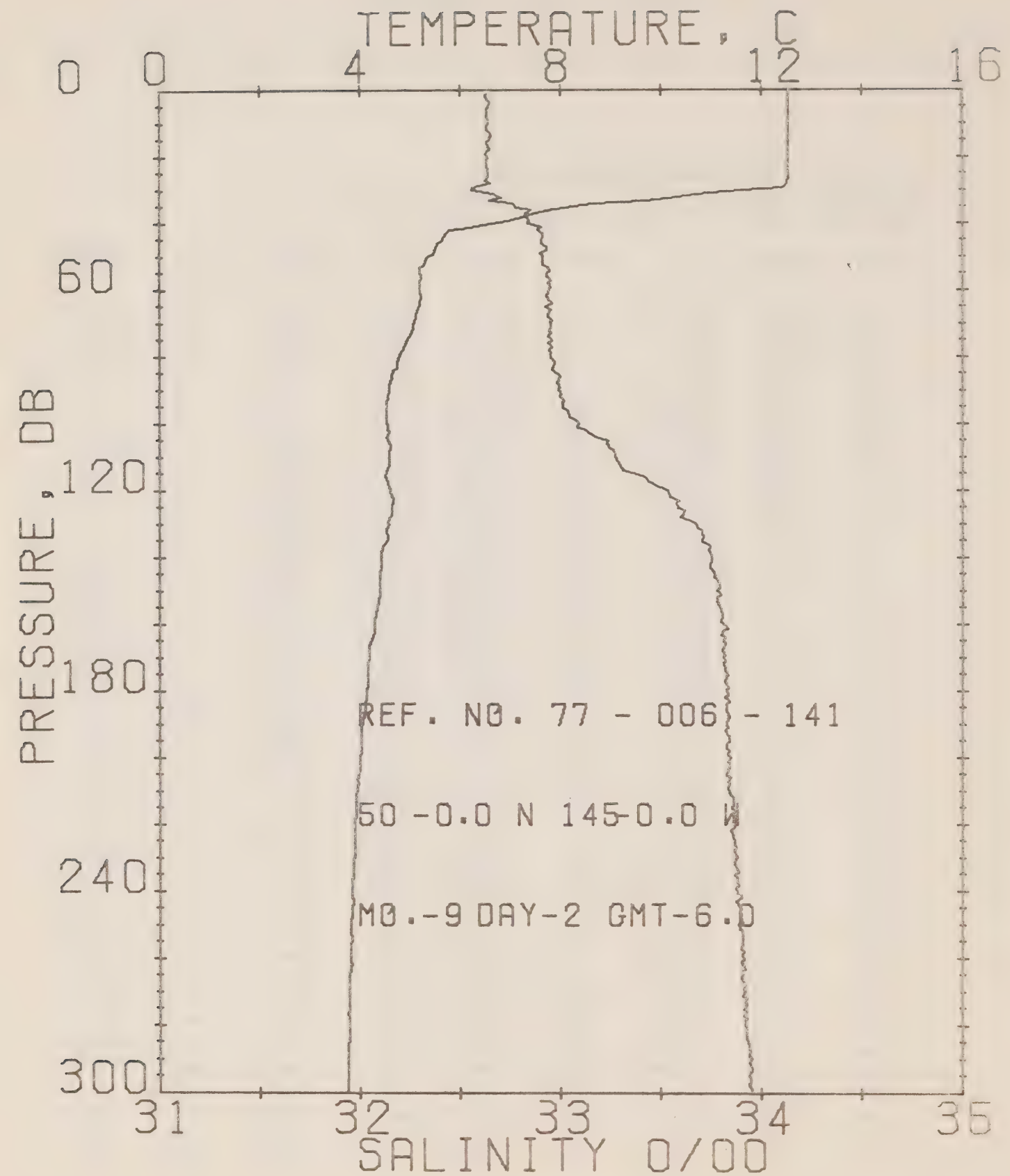
REFERENCE NO. 77- 8-140

DATE 2/ 9/77

POSITION 50- .0N, 145- .0W

GMT 2.9

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.58	32.63	0	24.66	328.7	.00	.00	1497.
5	12.59	32.63	5	24.66	328.9	.16	.00	1497.
10	12.56	32.62	10	24.66	329.2	.33	.02	1497.
15	12.54	32.62	15	24.66	329.4	.49	.04	1497.
20	12.49	32.64	20	24.69	327.0	.66	.07	1497.
25	11.57	32.68	25	24.89	307.7	.82	.10	1493.
30	10.20	32.67	30	25.12	285.4	.97	.15	1489.
35	7.37	32.85	35	25.76	230.6	1.09	.19	1478.
40	6.23	32.89	40	25.86	213.5	1.20	.23	1474.
45	5.71	32.91	45	25.96	205.5	1.31	.27	1472.
50	5.36	32.91	50	26.00	201.7	1.41	.32	1471.
55	5.23	32.94	55	26.05	197.9	1.51	.36	1470.
60	5.06	32.92	60	26.04	198.1	1.61	.44	1469.
65	4.97	32.93	65	26.07	196.0	1.71	.50	1469.
70	4.95	32.95	70	26.08	194.5	1.80	.56	1469.
75	4.83	32.94	75	26.09	194.2	1.90	.64	1469.
80	4.71	32.94	80	26.10	192.6	2.00	.71	1468.
90	4.63	32.97	89	26.15	190.2	2.19	.86	1468.
100	4.55	33.05	99	26.20	183.4	2.38	1.06	1468.
110	4.57	33.20	109	26.32	172.2	2.56	1.25	1469.
120	4.72	33.42	119	26.48	157.1	2.72	1.44	1470.
130	4.61	33.64	129	26.66	139.9	2.87	1.65	1470.
140	4.59	33.75	139	26.76	131.1	3.00	1.82	1470.
150	4.43	33.78	149	26.80	127.5	3.13	2.01	1469.
160	4.35	33.80	159	26.82	125.4	3.26	2.21	1469.
170	4.26	33.82	169	26.85	122.6	3.38	2.42	1469.
180	4.20	33.83	179	26.86	121.4	3.50	2.65	1469.
190	4.09	33.84	189	26.88	120.0	3.62	2.86	1469.
200	4.06	33.85	199	26.89	118.6	3.74	3.10	1469.
210	4.03	33.86	208	26.90	117.7	3.86	3.35	1469.
220	3.89	33.86	215	26.91	116.6	3.98	3.60	1468.
230	3.84	33.86	226	26.91	116.6	4.10	3.87	1468.
240	3.83	33.87	236	26.92	115.7	4.21	4.15	1469.
250	3.81	33.86	243	26.94	114.3	4.33	4.40	1469.
260	3.78	33.91	258	26.97	111.9	4.44	4.70	1469.
270	3.76	33.91	266	26.96	112.2	4.55	5.00	1469.
280	3.75	33.93	276	26.99	110.2	4.66	5.35	1469.
290	3.75	33.93	285	26.99	110.2	4.77	5.67	1469.
300	3.75	33.94	293	26.99	110.0	4.88	6.00	1469.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6-141

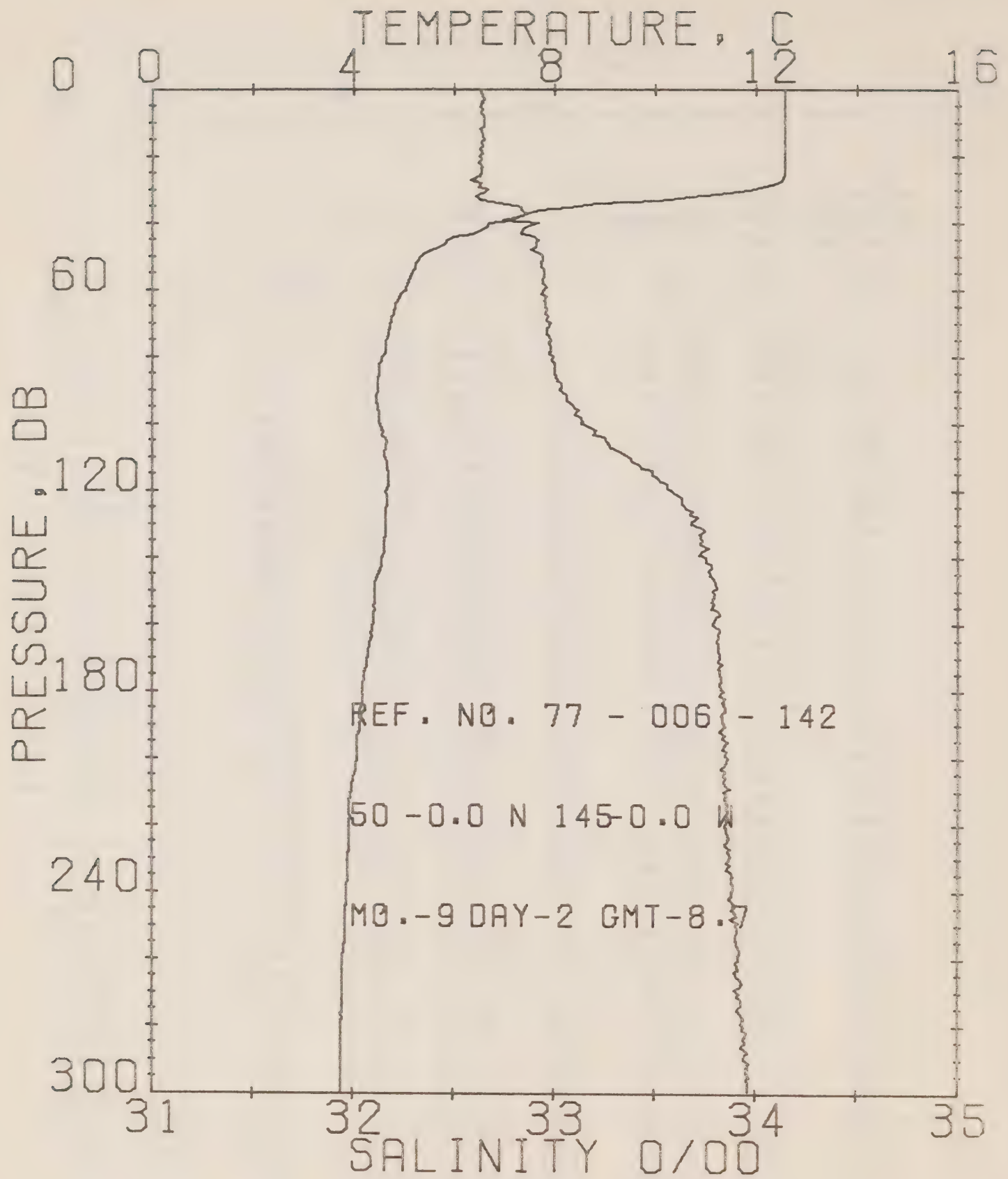
DATE 2/ 9/77

POSITION 50- .0N, 145- .0W

GMI 6.0

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.54	32.63	0	24.67	328.0	.00	.00	1490.
5	12.54	32.64	5	24.68	327.4	.16	.00	1490.
10	12.54	32.64	10	24.68	327.5	.33	.02	1497.
15	12.54	32.64	15	24.68	327.6	.49	.04	1497.
20	12.53	32.64	20	24.68	327.9	.66	.07	1497.
25	12.52	32.64	25	24.68	327.7	.82	.10	1497.
30	11.72	32.56	30	24.77	319.0	.98	.15	1494.
35	8.17	32.78	35	25.53	247.0	1.12	.20	1481.
40	5.63	32.64	40	25.79	222.0	1.24	.24	1475.
45	5.63	32.91	45	25.97	205.0	1.34	.29	1472.
50	5.37	32.91	50	26.00	201.9	1.44	.34	1471.
55	5.22	32.93	55	26.04	198.6	1.54	.39	1470.
60	5.21	32.94	60	26.05	197.9	1.64	.45	1470.
65	5.19	32.93	65	26.04	198.4	1.74	.51	1470.
70	5.08	32.95	70	26.07	195.7	1.84	.56	1470.
75	4.94	32.96	75	26.09	193.6	1.94	.65	1469.
80	4.77	32.95	80	26.10	192.6	2.03	.75	1469.
90	4.57	32.99	89	26.15	187.6	2.22	.69	1468.
100	4.56	33.09	99	26.24	179.9	2.41	1.07	1468.
110	4.59	33.27	109	26.38	166.9	2.58	1.25	1469.
120	4.62	33.53	119	26.58	147.8	2.74	1.44	1469.
130	4.58	33.67	129	26.69	137.0	2.88	1.62	1470.
140	4.42	33.75	139	26.76	129.2	3.02	1.80	1469.
150	4.40	33.78	149	26.80	127.2	3.14	1.99	1469.
160	4.29	33.82	159	26.84	123.6	3.27	2.19	1469.
170	4.17	33.81	169	26.85	122.6	3.39	2.40	1469.
180	4.13	33.82	179	26.86	121.3	3.51	2.62	1469.
190	4.04	33.83	189	26.87	120.3	3.63	2.84	1469.
200	4.00	33.85	199	26.89	118.4	3.75	3.08	1469.
210	3.93	33.84	208	26.89	118.4	3.87	3.33	1468.
220	3.90	33.88	218	26.93	115.5	3.99	3.59	1468.
230	3.88	33.88	228	26.93	115.1	4.11	3.85	1469.
240	3.85	33.88	238	26.93	115.0	4.22	4.13	1469.
250	3.82	33.89	248	26.94	114.0	4.34	4.41	1469.
260	3.82	33.91	258	26.96	112.2	4.45	4.71	1469.
270	3.78	33.92	268	26.97	111.3	4.56	5.01	1469.
280	3.78	33.92	278	26.97	111.3	4.67	5.32	1469.
290	3.77	33.95	288	27.00	109.1	4.78	5.64	1469.
300	3.76	33.95	298	27.00	109.0	4.89	5.97	1469.





## OFFSHORE OCEANOGRAPHY GROUP

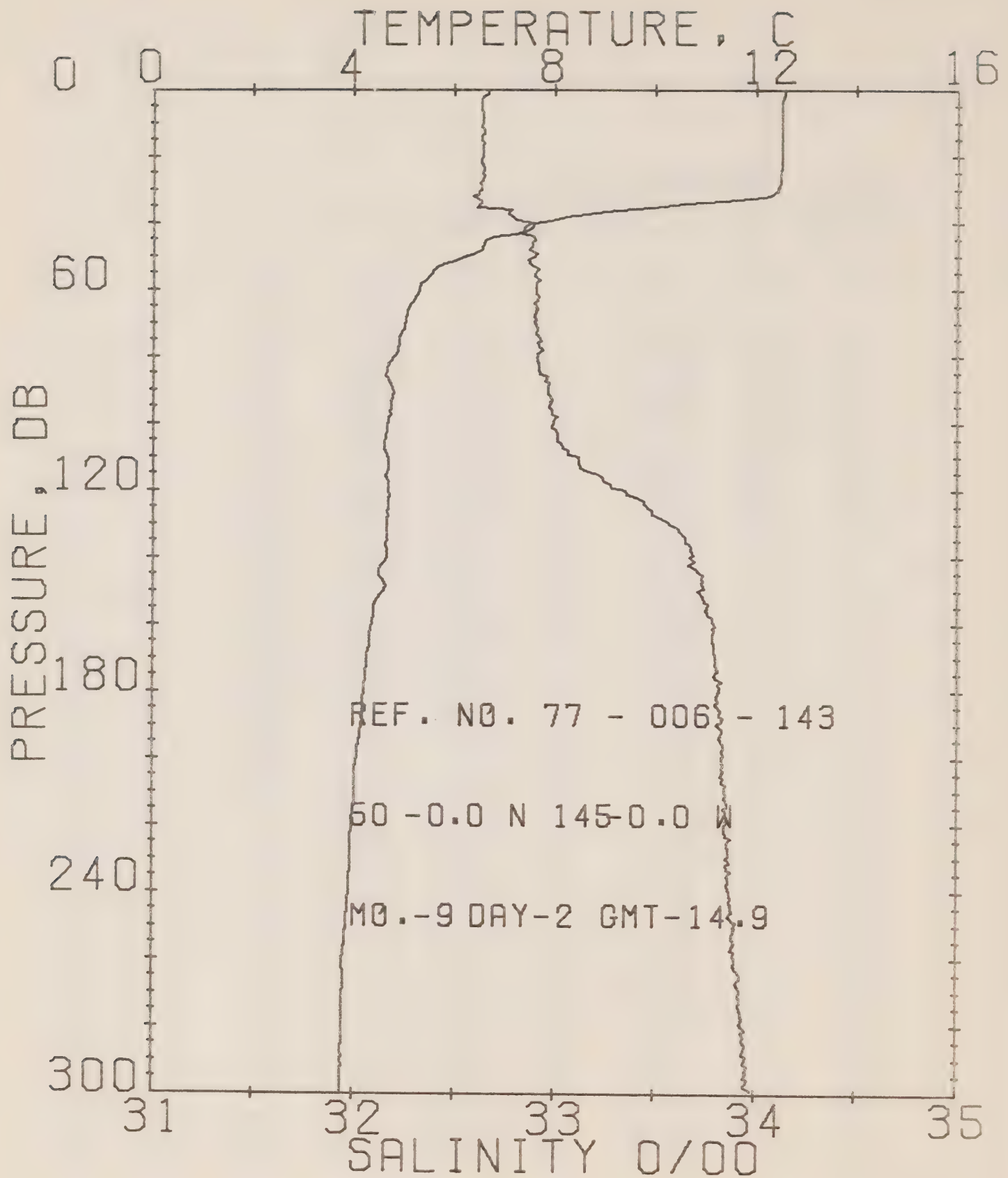
REFERENCE NO. 77- 8-142

DATE 2/ 9/77

POSITION 50- .0N, 145- .0W

GMT 8.7

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.55	32.84	0	24.67	327.9	.00	.00	1498.
5	12.55	32.83	5	24.67	328.5	.16	.00	1498.
10	12.56	32.85	10	24.68	327.1	.33	.02	1497.
15	12.56	32.84	15	24.68	327.6	.49	.04	1497.
20	12.56	32.85	20	24.67	328.8	.66	.07	1497.
25	12.55	32.84	25	24.67	328.4	.82	.10	1497.
30	11.86	32.86	30	24.83	314.0	.98	.15	1495.
35	8.32	32.82	35	25.54	245.7	1.13	.20	1482.
40	6.72	32.91	40	25.84	217.6	1.24	.24	1470.
45	5.85	32.92	45	25.95	206.5	1.35	.29	1472.
50	5.32	32.94	50	26.03	199.0	1.45	.34	1470.
55	5.15	32.94	55	26.05	197.0	1.55	.39	1470.
60	5.04	32.95	60	26.07	195.6	1.65	.45	1469.
65	4.83	32.95	65	26.10	192.8	1.75	.51	1469.
70	4.73	32.96	70	26.15	190.1	1.84	.56	1468.
75	4.65	32.96	75	26.13	189.4	1.94	.65	1468.
80	4.57	32.99	80	26.16	187.3	2.03	.72	1468.
90	4.48	33.03	89	26.19	183.9	2.22	.86	1468.
100	4.52	33.13	99	26.27	176.5	2.40	1.00	1468.
110	4.64	33.37	109	26.44	160.3	2.57	1.24	1469.
120	4.65	33.58	119	26.61	144.6	2.72	1.41	1470.
130	4.65	33.68	129	26.69	137.0	2.86	1.59	1470.
140	4.57	33.75	139	26.76	130.9	2.99	1.77	1470.
150	4.43	33.79	149	26.80	126.8	3.12	1.95	1469.
160	4.38	33.79	159	26.81	126.6	3.25	2.10	1469.
170	4.27	33.82	169	26.85	122.9	3.37	2.37	1469.
180	4.19	33.84	179	26.87	120.9	3.49	2.59	1469.
190	4.13	33.84	189	26.86	120.1	3.61	2.84	1469.
200	4.07	33.86	199	26.90	118.2	3.73	3.08	1469.
210	3.95	33.85	208	26.90	118.2	3.85	3.30	1469.
220	3.93	33.85	218	26.90	117.8	3.97	3.56	1469.
230	3.90	33.87	228	26.92	116.0	4.09	3.85	1469.
240	3.86	33.88	238	26.95	114.9	4.20	4.11	1469.
250	3.84	33.91	248	26.95	113.0	4.32	4.39	1469.
260	3.80	33.91	258	26.97	112.0	4.43	4.65	1469.
270	3.79	33.91	268	26.96	112.2	4.54	4.99	1469.
280	3.76	33.94	278	26.99	110.1	4.65	5.30	1469.
290	3.75	33.94	288	26.99	109.6	4.76	5.62	1469.
300	3.75	33.97	298	27.01	107.9	4.87	5.94	1469.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 17- 6-145

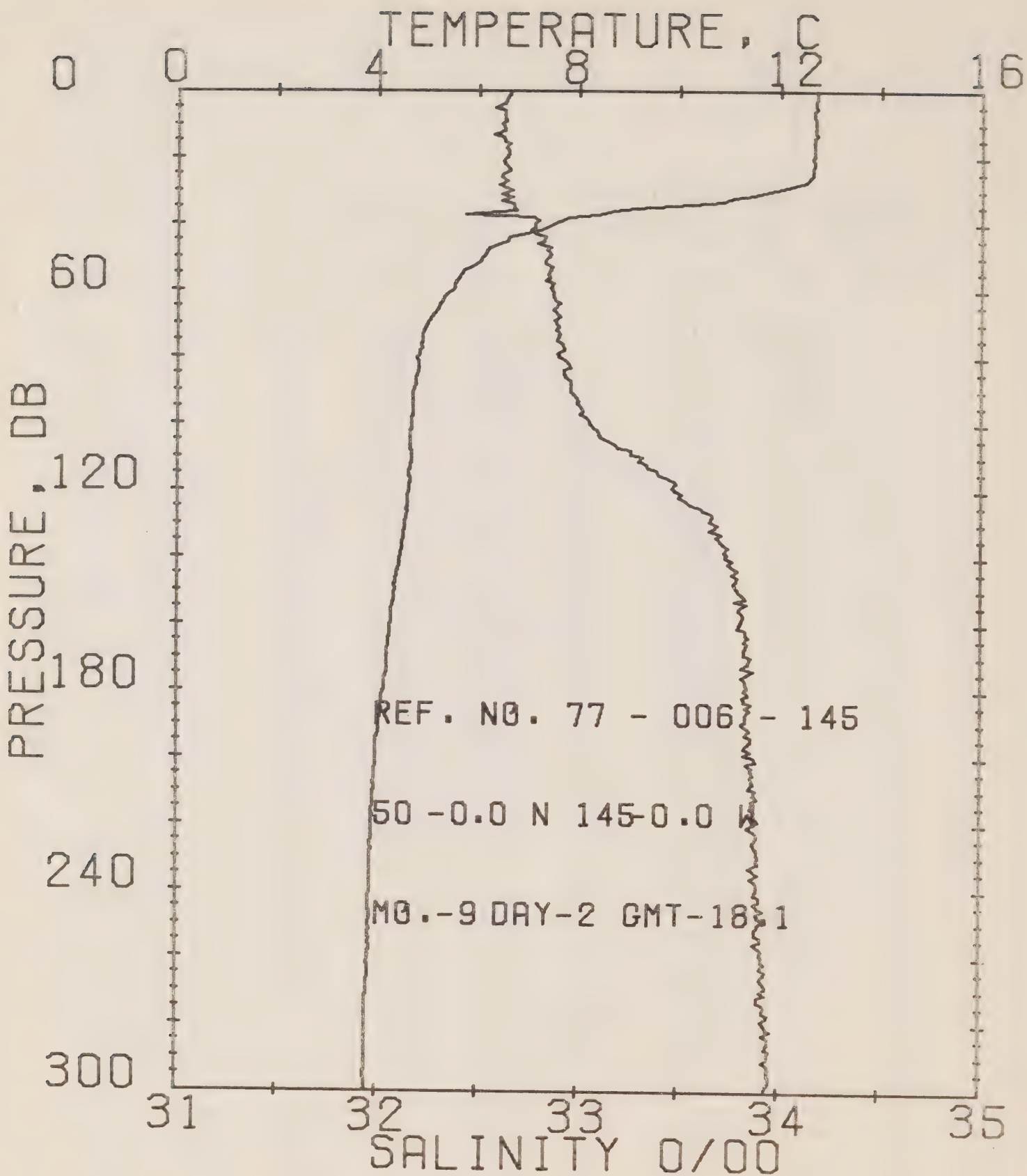
DATE 2/ 9/77

POSITION 50- 00N, 145- 00W

GMT 14.9

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA J	POT. EV	SOUND
0	12.55	32.67	0	24.70	325.5	.00	.00	1496.
5	12.50	32.64	5	24.68	327.0	.16	.00	1496.
10	12.50	32.64	10	24.69	326.8	.33	.02	1496.
15	12.50	32.63	15	24.68	327.5	.40	.04	1496.
20	12.50	32.64	20	24.69	327.0	.65	.07	1497.
25	12.48	32.64	25	24.69	326.7	.82	.10	1497.
30	12.42	32.63	30	24.70	326.3	.90	.15	1496.
35	9.97	32.62	35	25.12	285.7	1.14	.20	1483.
40	7.65	32.60	40	25.60	232.4	1.26	.20	1479.
45	5.62	32.90	45	25.84	217.3	1.38	.30	1476.
50	5.19	32.90	50	25.90	212.0	1.40	.35	1474.
55	5.54	32.90	55	25.97	204.7	1.50	.41	1471.
60	5.51	32.91	60	25.01	201.6	1.60	.47	1470.
65	5.09	32.91	65	26.05	199.3	1.70	.50	1470.
70	5.02	32.90	70	26.04	198.7	1.80	.60	1469.
75	4.91	32.93	75	26.07	195.4	1.90	.67	1469.
80	4.60	32.91	80	25.07	195.8	2.00	.75	1469.
90	4.79	32.97	90	26.11	191.6	2.28	.92	1469.
100	4.68	32.99	99	26.14	188.6	2.47	1.10	1469.
110	4.66	33.11	109	26.24	179.7	2.66	1.30	1469.
120	4.69	33.35	119	26.40	162.1	2.83	1.50	1469.
130	4.67	33.57	129	26.61	145.4	2.90	1.70	1470.
140	4.67	33.68	139	26.69	137.6	3.12	1.89	1470.
150	4.60	33.72	149	26.73	134.0	3.26	2.09	1470.
160	4.56	33.79	159	26.81	125.8	3.30	2.28	1469.
170	4.26	33.60	169	26.33	124.3	3.51	2.50	1469.
180	4.21	33.82	179	26.35	122.6	3.63	2.70	1469.
190	4.16	33.81	189	26.34	123.1	3.76	2.90	1469.
200	4.06	33.84	199	26.86	119.8	3.80	3.10	1469.
210	4.02	33.65	209	26.69	118.8	4.00	3.40	1469.
220	3.97	33.65	210	26.90	116.4	4.11	3.70	1469.
230	3.95	33.66	220	26.90	117.6	4.23	3.97	1469.
240	3.91	33.87	230	26.92	116.1	4.35	4.20	1469.
250	3.86	33.90	240	26.95	113.7	4.46	4.50	1469.
260	3.79	33.90	250	26.96	112.9	4.50	4.80	1469.
270	3.79	33.93	260	26.98	111.1	4.60	5.10	1469.
280	3.76	33.93	270	26.98	110.6	4.60	5.40	1469.
290	3.77	33.95	280	27.00	108.9	4.91	5.77	1469.
300	3.76	33.95	290	27.00	109.1	5.02	5.89	1469.





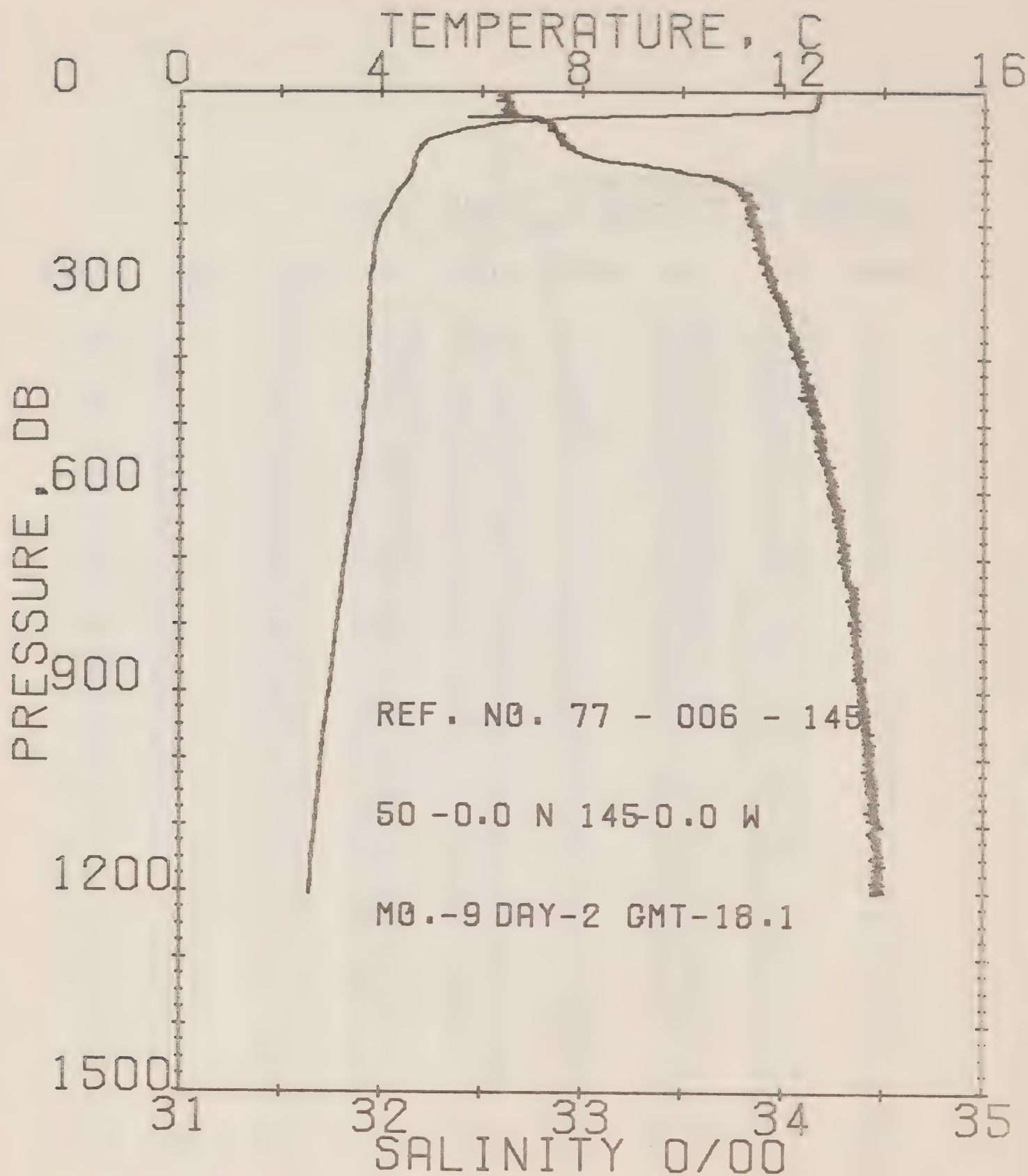
## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6-145

DATE 2/ 9/77

POSITION 50- .0N, 145- .0W GMT 18.1

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.73	32.65	0	24.65	329.9	.00	.00	1497.
5	12.71	32.58	5	24.60	334.7	.17	.00	1497.
10	12.69	32.62	10	24.63	332.1	.33	.02	1497.
15	12.65	32.62	15	24.64	330.8	.50	.04	1497.
20	12.65	32.64	20	24.66	329.8	.66	.07	1497.
25	12.64	32.63	25	24.65	330.6	.83	.11	1497.
30	11.78	32.67	30	24.84	312.5	.99	.15	1494.
35	9.39	32.67	35	25.26	272.6	1.14	.20	1486.
40	7.49	32.78	40	25.63	237.3	1.27	.25	1479.
45	6.55	32.83	45	25.79	221.9	1.38	.30	1475.
50	6.09	32.86	50	25.87	214.2	1.49	.35	1473.
55	5.65	32.85	55	25.92	209.8	1.60	.41	1472.
60	5.46	32.87	60	25.96	206.1	1.70	.47	1471.
65	5.20	32.89	65	26.01	201.7	1.80	.53	1470.
70	4.98	32.89	70	26.03	199.2	1.90	.60	1469.
75	4.87	32.89	75	26.04	198.0	2.00	.68	1469.
80	4.78	32.90	80	26.06	196.6	2.10	.75	1469.
90	4.71	32.96	89	26.12	191.3	2.29	.92	1469.
100	4.66	33.06	99	26.20	183.8	2.48	1.10	1469.
110	4.68	33.31	109	26.40	164.7	2.66	1.29	1469.
120	4.61	33.48	119	26.54	151.6	2.81	1.48	1469.
130	4.54	33.68	129	26.71	135.7	2.96	1.66	1469.
140	4.43	33.73	139	26.76	131.1	3.09	1.84	1469.
150	4.32	33.80	149	26.82	125.2	3.22	2.03	1469.
160	4.25	33.81	159	26.84	123.6	3.34	2.22	1469.
170	4.19	33.86	169	26.88	119.3	3.46	2.43	1469.
180	4.10	33.83	179	26.87	120.7	3.58	2.64	1469.
190	4.02	33.82	189	26.87	121.0	3.70	2.87	1468.
200	3.98	33.87	199	26.91	116.6	3.82	3.11	1469.
210	3.92	33.88	209	26.93	115.1	3.94	3.35	1468.
220	3.90	33.88	218	26.93	115.2	4.05	3.60	1469.
230	3.87	33.90	228	26.95	113.7	4.17	3.87	1469.
240	3.86	33.89	238	26.94	113.9	4.28	4.14	1469.
250	3.85	33.91	248	26.96	112.8	4.40	4.42	1469.
260	3.84	33.92	258	26.97	111.8	4.51	4.72	1469.
270	3.82	33.92	268	26.97	111.4	4.62	5.02	1469.
280	3.78	33.93	278	26.98	110.4	4.73	5.33	1469.
290	3.78	33.95	288	27.00	109.1	4.84	5.65	1469.
300	3.78	33.96	298	27.00	109.0	4.95	5.98	1469.



## OFFSHORE OCEANOGRAPHY GROUP

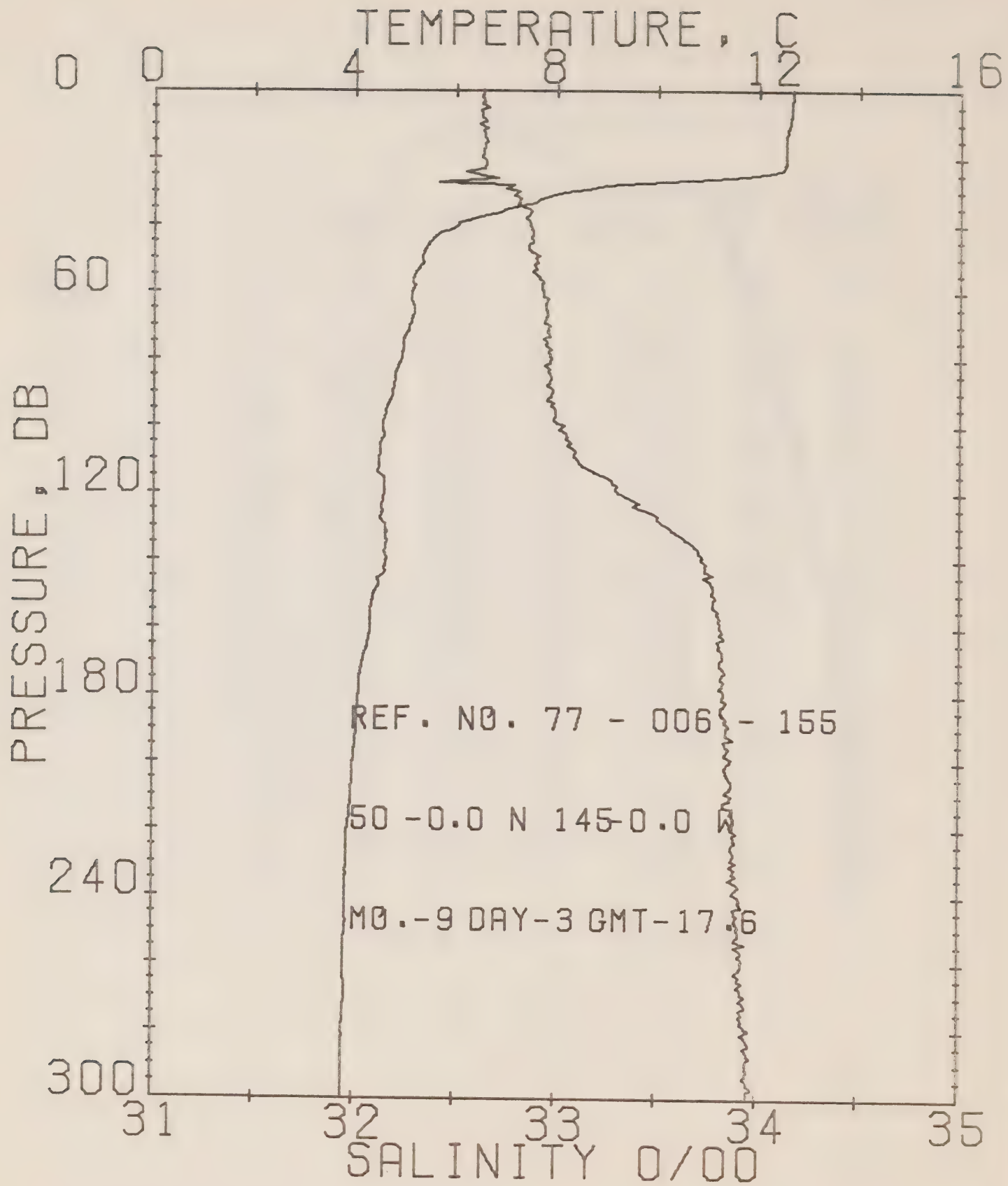
REFERENCE NO. 77- 6-145

DATE 2/ 9/77

POSITION 50- 00N, 145- 00W GMT 18.1

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.73	32.85	0	24.65	329.9	.00	.00	1497.
50	8.09	32.86	50	25.87	214.2	1.40	.35	1473.
100	4.86	33.06	99	26.20	183.8	2.48	1.10	1469.
150	4.32	33.30	149	26.82	125.2	3.22	2.05	1469.
200	3.98	33.87	199	26.91	116.6	3.82	3.11	1469.
250	3.85	33.91	248	26.96	112.8	4.40	4.42	1469.
300	3.78	33.96	298	27.00	109.0	4.95	5.98	1469.
350	3.77	34.01	347	27.05	105.2	5.48	7.73	1470.
400	3.75	34.07	397	27.10	100.6	5.99	9.68	1471.
450	3.71	34.14	446	27.15	95.6	6.48	11.60	1472.
500	3.64	34.15	496	27.17	94.5	6.95	14.09	1472.
550	3.57	34.20	545	27.21	90.6	7.41	16.54	1473.
600	3.48	34.25	595	27.27	85.9	7.85	19.11	1473.
650	3.37	34.28	644	27.30	83.3	8.27	21.60	1474.
700	3.28	34.33	694	27.35	78.6	8.68	24.09	1474.
750	3.21	34.37	743	27.38	75.6	9.07	27.51	1475.
800	3.11	34.50	793	27.38	75.6	9.45	30.51	1475.
850	3.04	34.38	842	27.41	73.3	9.83	33.65	1476.
900	2.97	34.40	891	27.43	71.8	10.19	36.91	1476.
950	2.88	34.42	941	27.45	69.7	10.55	40.25	1477.
1000	2.81	34.43	990	27.47	68.6	10.80	43.67	1477.
1050	2.76	34.45	1040	27.47	68.1	11.23	47.20	1478.
1100	2.69	34.49	1089	27.53	63.3	11.56	50.82	1479.
1150	2.62	34.45	1138	27.51	65.3	11.88	54.52	1479.
1200	2.59	34.50	1188	27.55	61.7	12.20	58.35	1480.





## OFFSHORE OCEANOGRAPHY GROUP

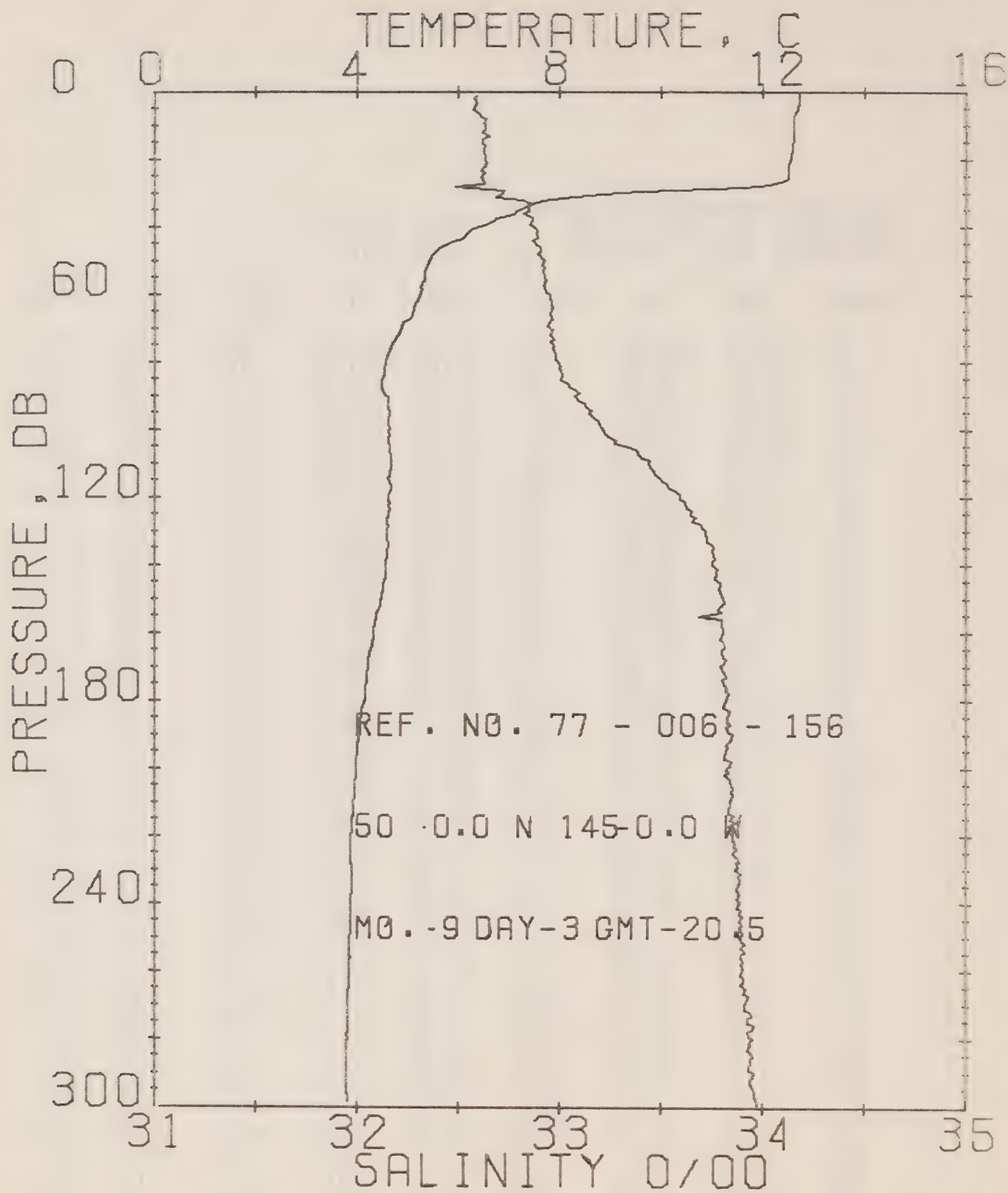
REFERENCE NO. 77- 6-155

DATE 3/ 9/77

POSITION 50- .0N, 145- .0W

GMT 17.6

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.66	32.63	0	24.65	330.0	.00	.00	1497.
5	12.63	32.66	5	24.67	327.7	.16	.00	1497.
10	12.62	32.62	10	24.65	330.6	.33	.02	1497.
15	12.54	32.65	15	24.69	326.8	.49	.04	1497.
20	12.53	32.63	20	24.67	328.6	.66	.07	1497.
25	11.79	32.62	25	24.80	315.8	.82	.10	1494.
30	8.19	32.80	30	25.55	245.3	.96	.14	1481.
35	7.00	32.86	35	25.76	225.3	1.08	.18	1477.
40	6.03	32.87	40	25.89	212.4	1.19	.22	1473.
45	5.47	32.88	45	25.97	205.1	1.29	.27	1471.
50	5.34	32.89	50	25.99	202.9	1.39	.32	1470.
55	5.17	32.91	55	26.02	200.1	1.49	.37	1470.
60	5.13	32.93	60	26.05	197.8	1.59	.43	1470.
65	5.17	32.95	65	26.05	197.0	1.69	.49	1470.
70	5.08	32.96	70	26.08	195.0	1.79	.56	1470.
75	4.96	32.95	75	26.08	194.3	1.89	.63	1469.
80	4.93	32.97	80	26.10	192.8	1.98	.71	1469.
90	4.75	32.98	89	26.13	190.1	2.18	.88	1469.
100	4.56	33.04	99	26.19	184.0	2.37	1.06	1468.
110	4.49	33.10	109	26.25	178.9	2.55	1.25	1468.
120	4.58	33.31	119	26.40	164.3	2.72	1.45	1469.
130	4.62	33.55	129	26.59	146.4	2.87	1.65	1470.
140	4.62	33.72	139	26.73	134.0	3.01	1.84	1470.
150	4.38	33.77	149	26.79	127.6	3.14	2.03	1469.
160	4.31	33.82	159	26.84	123.7	3.27	2.23	1469.
170	4.17	33.82	169	26.85	122.3	3.39	2.44	1469.
180	4.08	33.83	179	26.87	120.2	3.51	2.65	1469.
190	4.05	33.85	189	26.89	118.8	3.63	2.88	1469.
200	3.98	33.86	199	26.91	117.0	3.75	3.11	1469.
210	3.94	33.87	208	26.92	116.3	3.87	3.36	1469.
220	3.88	33.87	218	26.92	115.6	3.98	3.61	1468.
230	3.87	33.90	228	26.95	113.5	4.10	3.88	1469.
240	3.84	33.91	238	26.95	112.9	4.21	4.15	1469.
250	3.84	33.91	248	26.96	112.5	4.32	4.43	1469.
260	3.81	33.93	258	26.98	110.9	4.44	4.72	1469.
270	3.83	33.94	268	26.99	110.2	4.55	5.03	1469.
280	3.79	33.97	278	27.01	108.1	4.66	5.34	1469.
290	3.78	33.95	288	27.00	109.3	4.77	5.65	1469.
300	3.78	33.96	298	27.01	108.5	4.88	5.98	1469.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6-156

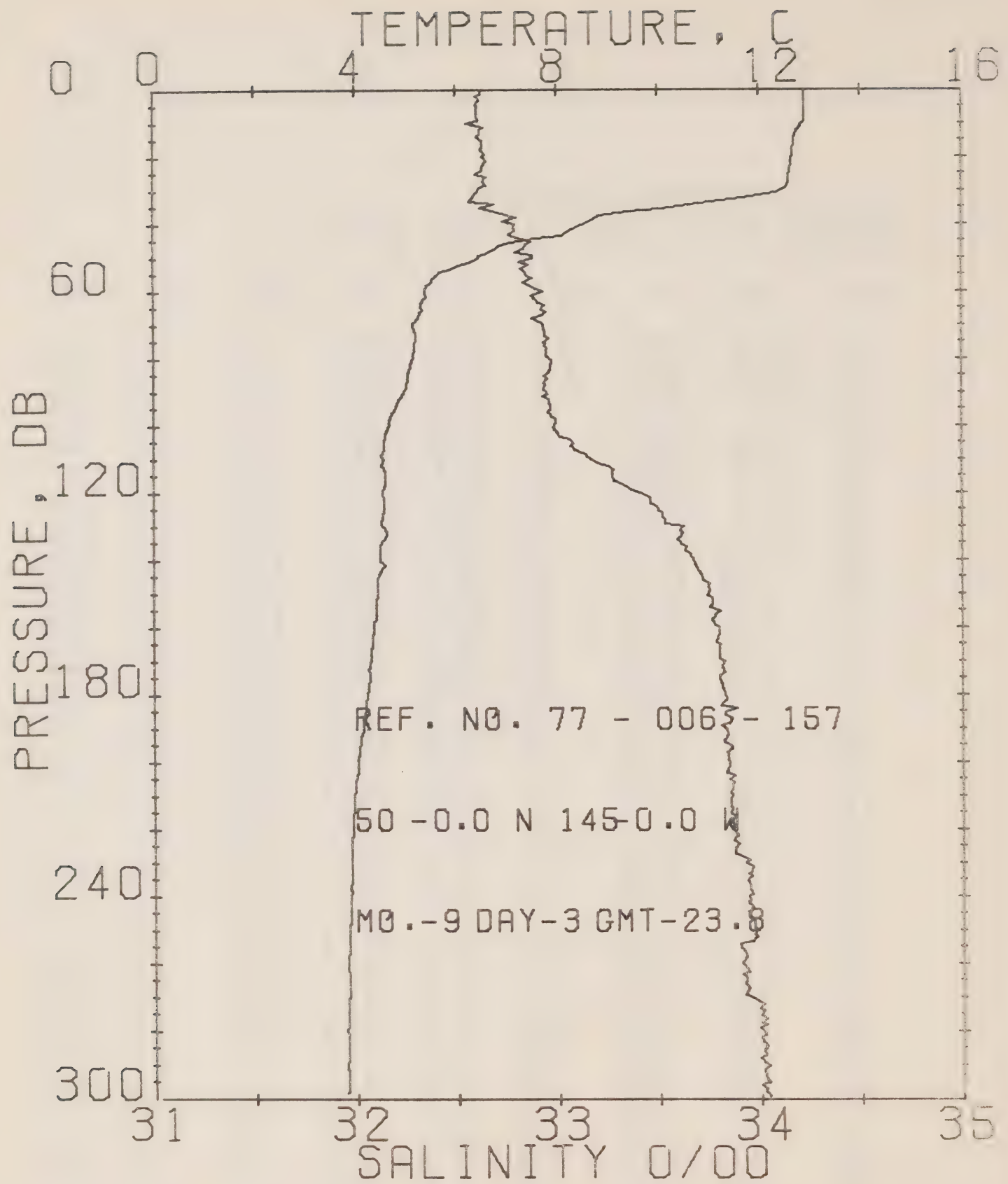
DATE 3/ 9/77

POSITION 50- .0N, 145- .0W

GMT 20.5

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.73	32.80	0	24.61	333.9	.00	.00	1497.
5	12.69	32.87	5	24.60	334.8	.17	.00	1497.
10	12.62	32.83	10	24.66	329.5	.33	.02	1497.
15	12.60	32.82	15	24.65	330.0	.50	.04	1497.
20	12.53	32.64	20	24.68	327.8	.66	.07	1497.
25	12.50	32.61	25	24.67	329.0	.83	.10	1497.
30	8.93	32.72	30	25.37	262.0	.98	.15	1484.
35	7.18	32.85	35	25.75	228.1	1.10	.19	1477.
40	6.34	32.87	40	25.85	216.0	1.21	.23	1474.
45	5.73	32.88	45	25.94	207.9	1.32	.28	1472.
50	5.42	32.93	50	26.01	201.0	1.42	.33	1471.
55	5.33	32.93	55	26.02	200.0	1.52	.38	1470.
60	5.22	32.95	60	26.05	197.4	1.62	.44	1470.
65	5.08	32.96	65	26.07	195.5	1.72	.50	1470.
70	4.85	32.96	70	26.10	192.4	1.81	.57	1469.
75	4.67	32.97	75	26.13	190.2	1.91	.64	1468.
80	4.55	32.99	80	26.16	187.3	2.01	.71	1468.
90	4.60	33.08	89	26.22	181.6	2.19	.87	1468.
100	4.63	33.21	99	26.32	171.7	2.37	1.04	1469.
110	4.67	33.44	109	26.50	154.9	2.53	1.22	1469.
120	4.62	33.59	119	26.63	143.2	2.68	1.39	1470.
130	4.59	33.72	129	26.73	133.3	2.82	1.57	1470.
140	4.56	33.75	139	26.76	130.8	2.95	1.75	1470.
150	4.47	33.80	149	26.81	126.1	3.08	1.94	1470.
160	4.32	33.80	159	26.83	124.6	3.20	2.14	1469.
170	4.21	33.79	169	26.85	124.4	3.33	2.35	1469.
180	4.12	33.82	179	26.86	121.4	3.45	2.56	1469.
190	4.02	33.85	189	26.90	118.1	3.57	2.79	1469.
200	3.97	33.83	199	26.88	119.8	3.69	3.03	1468.
210	3.93	33.84	208	26.89	118.6	3.81	3.28	1468.
220	3.88	33.85	218	26.91	117.1	3.93	3.54	1468.
230	3.89	33.87	228	26.92	116.1	4.04	3.80	1469.
240	3.87	33.89	238	26.94	114.5	4.16	4.08	1469.
250	3.84	33.89	248	26.94	114.5	4.27	4.38	1469.
260	3.84	33.90	258	26.95	113.5	4.38	4.66	1469.
270	3.81	33.92	268	26.97	112.0	4.50	4.96	1469.
280	3.79	33.95	278	27.00	109.3	4.61	5.27	1469.
290	3.79	33.96	288	27.00	108.9	4.72	5.59	1469.
300	3.80	33.96	298	27.00	108.7	4.83	5.92	1470.





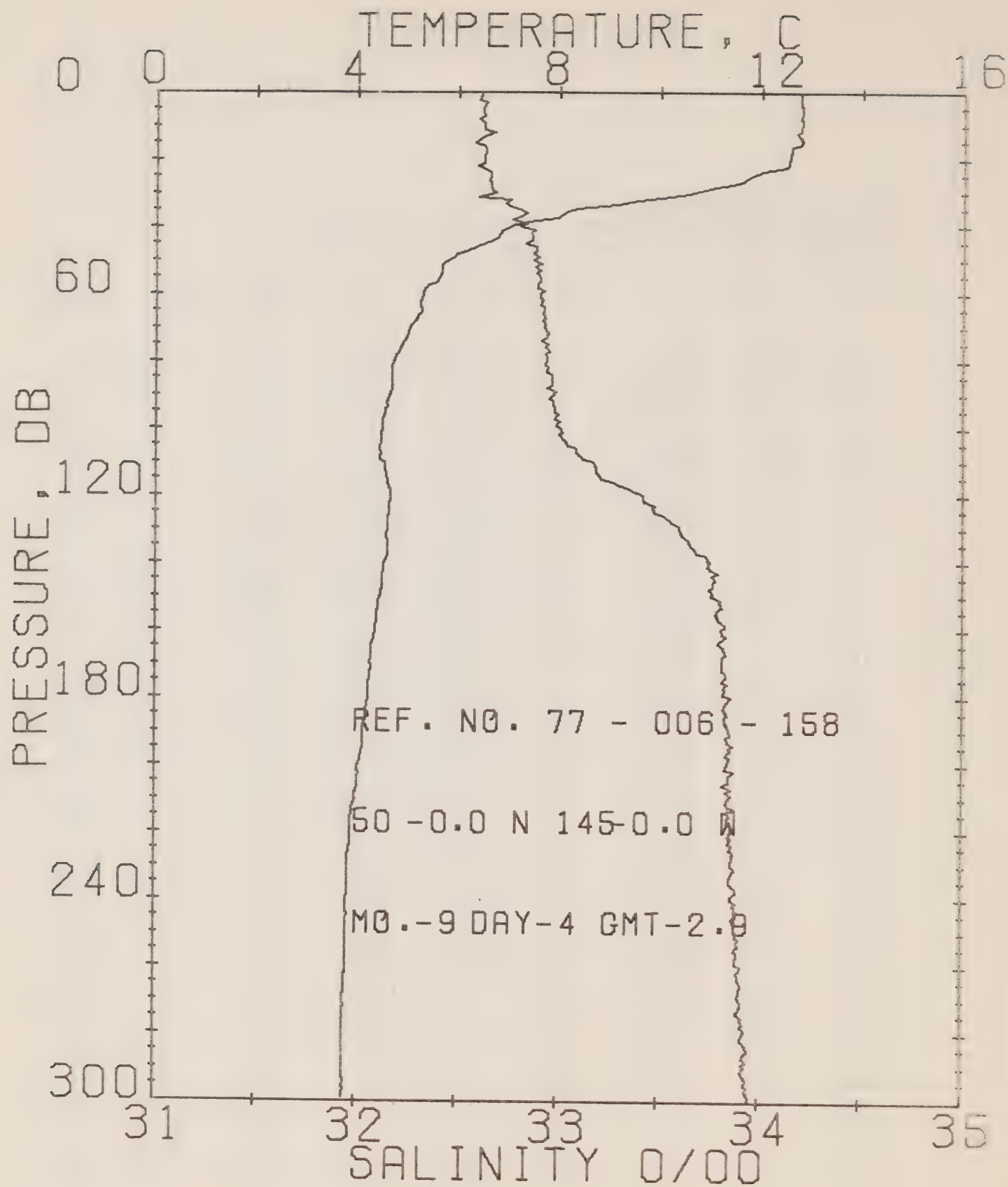
## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6-157

DATE 3/ 9/77

POSITION 50- .0N, 145- .0W GMT 23.8

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.90	32.63	0	24.60	334.8	.00	.00	1498.
5	12.91	32.61	5	24.58	336.7	.17	.00	1498.
10	12.86	32.56	10	24.56	339.2	.34	.02	1498.
15	12.69	32.63	15	24.64	331.0	.50	.04	1497.
20	12.65	32.63	20	24.65	330.2	.67	.07	1497.
25	12.59	32.60	25	24.64	331.6	.83	.11	1497.
30	12.55	32.61	30	24.69	326.6	1.00	.15	1496.
35	10.10	32.63	35	25.11	287.1	1.15	.20	1488.
40	8.47	32.79	40	25.49	250.5	1.28	.25	1483.
45	7.15	32.86	45	25.74	227.0	1.41	.31	1478.
50	6.43	32.88	50	25.85	216.8	1.52	.36	1475.
55	5.62	32.85	55	25.92	209.3	1.62	.42	1472.
60	5.39	32.93	60	26.02	200.7	1.73	.46	1471.
65	5.32	32.92	65	26.02	200.7	1.83	.54	1471.
70	5.14	32.93	70	26.05	197.9	1.93	.61	1470.
75	5.18	32.93	75	26.04	198.5	2.03	.66	1470.
80	5.12	32.97	80	26.08	195.2	2.12	.76	1470.
90	4.94	32.95	89	26.08	194.8	2.32	.95	1469.
100	4.64	32.98	99	26.14	189.0	2.51	1.12	1468.
110	4.57	33.16	109	26.29	174.9	2.69	1.31	1469.
120	4.54	33.40	119	26.48	156.7	2.86	1.51	1469.
130	4.56	33.62	129	26.65	140.9	3.01	1.70	1469.
140	4.49	33.67	139	26.70	136.2	3.15	1.89	1469.
150	4.42	33.75	149	26.77	130.0	3.28	2.06	1469.
160	4.34	33.80	159	26.82	125.2	3.41	2.29	1469.
170	4.28	33.82	169	26.85	122.9	3.54	2.50	1469.
180	4.21	33.83	179	26.86	121.8	3.66	2.72	1469.
190	4.12	33.83	189	26.87	121.1	3.78	2.94	1469.
200	4.03	33.84	199	26.89	119.0	3.90	3.16	1469.
210	3.95	33.86	209	26.91	117.2	4.02	3.46	1469.
220	3.91	33.86	218	26.91	116.8	4.13	3.69	1469.
230	3.89	33.93	228	26.97	111.7	4.25	3.95	1469.
240	3.87	33.94	238	26.98	110.4	4.36	4.21	1469.
250	3.84	33.98	248	27.02	107.2	4.47	4.49	1469.
260	3.82	33.91	258	26.96	112.7	4.58	4.77	1469.
270	3.81	33.95	268	27.00	109.3	4.69	5.07	1469.
280	3.80	34.01	278	27.04	105.2	4.80	5.37	1469.
290	3.79	34.03	288	27.06	103.3	4.90	5.67	1469.
300	3.79	34.03	298	27.06	103.3	5.00	5.99	1470.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6-158

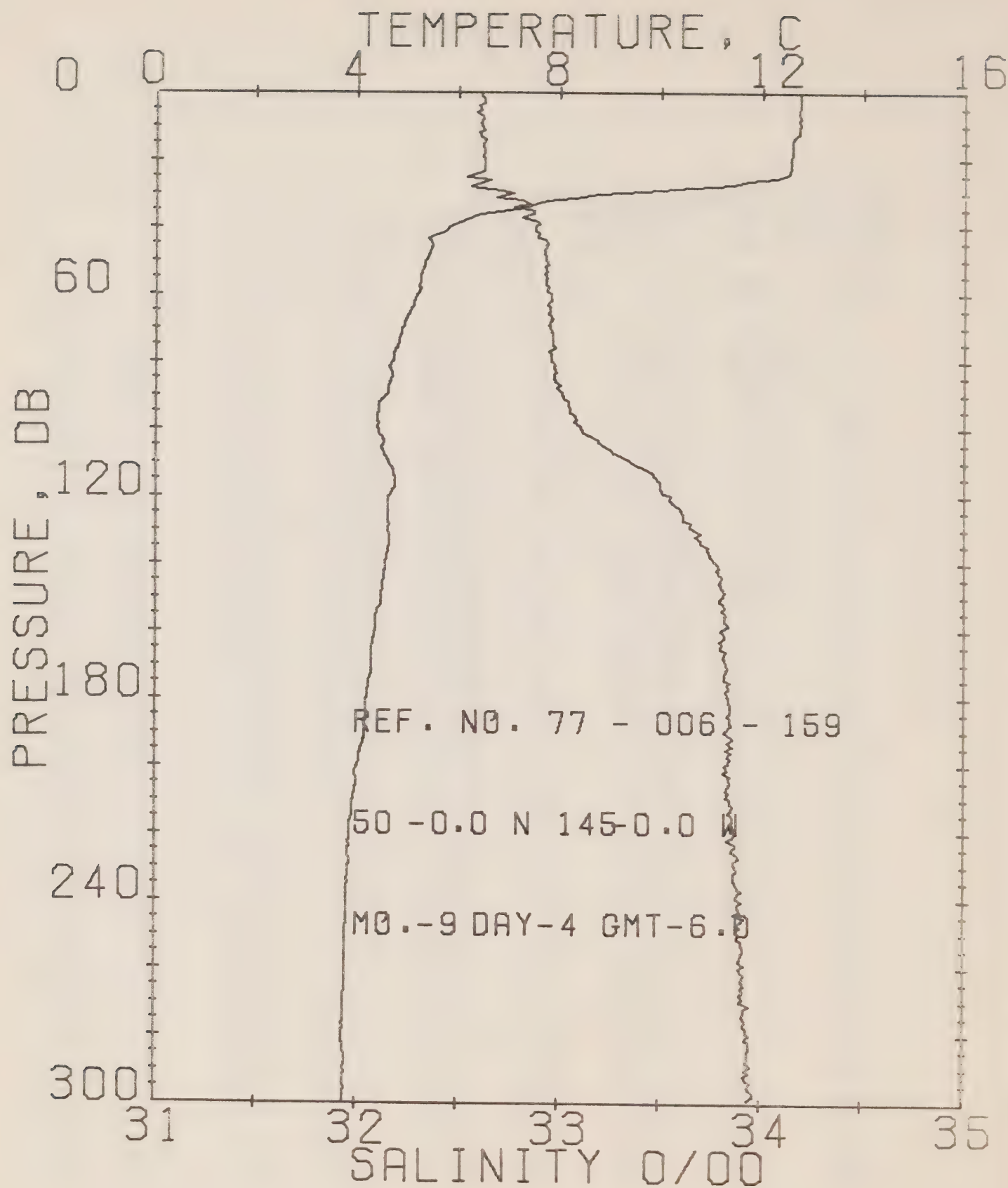
DATE 4/ 9/77

POSITION 50- .0N, 145- .0W

GMT 2.9

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.78	32.61	0	24.61	333.7	.00	.00	1497.
5	12.79	32.62	5	24.61	333.6	.17	.00	1497.
10	12.78	32.63	10	24.62	332.7	.33	.02	1497.
15	12.78	32.58	15	24.59	336.3	.50	.04	1497.
20	12.54	32.63	20	24.67	328.6	.66	.07	1497.
25	11.74	32.66	25	24.85	311.9	.83	.10	1494.
30	10.59	32.68	30	25.07	290.9	.98	.15	1490.
35	8.19	32.81	35	25.55	245.0	1.11	.19	1481.
40	7.01	32.81	40	25.72	229.0	1.23	.24	1477.
45	6.46	32.84	45	25.81	220.0	1.34	.26	1475.
50	5.81	32.88	50	25.92	209.2	1.45	.34	1472.
55	5.62	32.91	55	25.97	205.1	1.55	.39	1472.
60	5.30	32.91	60	26.01	201.4	1.65	.45	1470.
65	5.27	32.93	65	26.03	199.8	1.75	.52	1470.
70	5.04	32.93	70	26.05	197.2	1.85	.56	1470.
75	4.87	32.94	75	26.09	194.2	1.95	.66	1469.
80	4.72	32.94	80	26.10	192.8	2.05	.73	1468.
90	4.63	32.97	89	26.13	189.7	2.24	.90	1468.
100	4.49	33.01	99	26.16	185.7	2.43	1.06	1468.
110	4.55	33.17	109	26.30	174.1	2.61	1.27	1468.
120	4.66	33.41	119	26.46	157.0	2.78	1.47	1469.
130	4.61	33.60	129	26.63	142.7	2.93	1.66	1470.
140	4.54	33.75	139	26.76	130.5	3.07	1.85	1470.
150	4.46	33.76	149	26.78	129.4	3.19	2.04	1470.
160	4.36	33.81	159	26.83	124.6	3.32	2.24	1469.
170	4.28	33.82	169	26.84	123.6	3.44	2.45	1469.
180	4.23	33.85	179	26.87	120.4	3.57	2.67	1469.
190	4.13	33.85	189	26.86	119.7	3.69	2.90	1469.
200	4.03	33.84	199	26.86	119.4	3.81	3.13	1469.
210	4.01	33.85	208	26.89	118.7	3.93	3.36	1469.
220	3.89	33.86	216	26.91	116.6	4.04	3.64	1468.
230	3.83	33.86	228	26.92	115.9	4.16	3.91	1468.
240	3.82	33.86	236	26.92	116.0	4.28	4.16	1468.
250	3.81	33.89	246	26.94	114.0	4.39	4.47	1469.
260	3.80	33.91	256	26.97	112.0	4.50	4.77	1469.
270	3.77	33.91	266	26.96	112.2	4.62	5.07	1469.
280	3.76	33.93	276	26.98	110.6	4.73	5.38	1469.
290	3.77	33.95	286	26.96	110.5	4.84	5.71	1469.
300	3.76	33.97	296	27.02	107.5	4.95	6.04	1469.





## OFFSHORE OCEANOGRAPHY GROUP

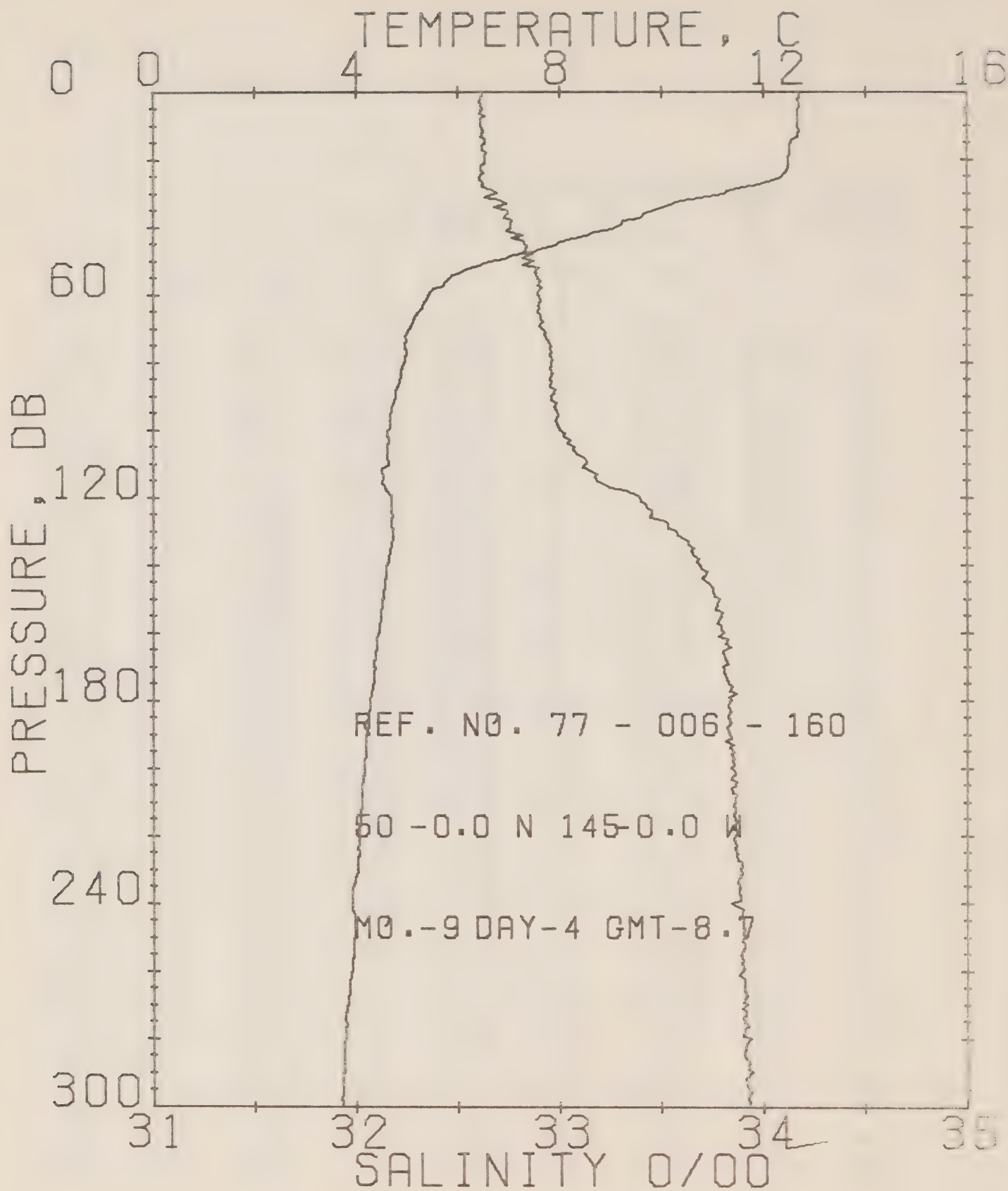
REFERENCE NO. 77- 6-159

DATE 4/ 9/77

POSITION 50- .0N, 145- .0W

GMT 6.0

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.75	32.61	0	24.62	333.2	.00	.00	1497.
5	12.73	32.61	5	24.62	332.9	.17	.00	1497.
10	12.73	32.61	10	24.62	333.1	.33	.02	1497.
15	12.59	32.62	15	24.65	330.1	.50	.04	1497.
20	12.56	32.63	20	24.66	329.2	.66	.07	1497.
25	12.26	32.54	25	24.65	330.1	.83	.11	1496.
30	8.82	32.77	30	25.42	257.0	.98	.15	1484.
35	6.89	32.86	35	25.77	223.8	1.10	.19	1476.
40	5.82	32.88	40	25.92	209.2	1.21	.23	1472.
45	5.49	32.94	45	26.01	201.1	1.31	.27	1471.
50	5.35	32.93	50	26.02	199.8	1.41	.32	1470.
55	5.25	32.94	55	26.04	198.4	1.51	.37	1470.
60	5.18	32.96	60	26.06	196.4	1.61	.43	1470.
65	5.04	32.95	65	26.07	195.3	1.70	.49	1470.
70	4.89	32.95	70	26.09	193.6	1.80	.56	1469.
75	4.81	32.97	75	26.11	191.7	1.90	.63	1469.
80	4.69	32.96	80	26.12	190.9	1.99	.71	1468.
90	4.56	33.01	89	26.17	185.8	2.18	.87	1468.
100	4.42	33.10	99	26.26	177.7	2.36	1.05	1468.
110	4.63	33.36	109	26.44	160.6	2.53	1.23	1469.
120	4.63	33.55	119	26.59	146.9	2.69	1.41	1470.
130	4.61	33.66	129	26.66	138.0	2.83	1.59	1470.
140	4.55	33.78	139	26.78	128.5	2.96	1.77	1470.
150	4.48	33.80	149	26.81	126.3	3.09	1.95	1470.
160	4.34	33.80	159	26.82	125.3	3.21	2.16	1469.
170	4.29	33.83	169	26.85	122.8	3.34	2.37	1469.
180	4.20	33.84	179	26.87	120.9	3.46	2.56	1469.
190	4.16	33.82	189	26.86	121.9	3.58	2.61	1469.
200	4.01	33.82	199	26.87	120.5	3.70	3.05	1469.
210	3.93	33.84	208	26.90	118.1	3.82	3.36	1468.
220	3.87	33.88	218	26.93	114.9	3.94	3.55	1468.
230	3.84	33.87	228	26.93	115.2	4.05	3.82	1468.
240	3.81	33.90	238	26.95	112.8	4.17	4.09	1468.
250	3.79	33.89	248	26.95	113.3	4.28	4.36	1469.
260	3.78	33.90	258	26.96	112.8	4.39	4.67	1469.
270	3.76	33.90	268	26.96	112.5	4.50	4.97	1469.
280	3.75	33.95	278	27.00	109.2	4.62	5.26	1469.
290	3.78	33.93	288	26.98	110.6	4.73	5.66	1469.
300	3.77	33.93	298	26.98	110.9	4.83	5.95	1469.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6-160

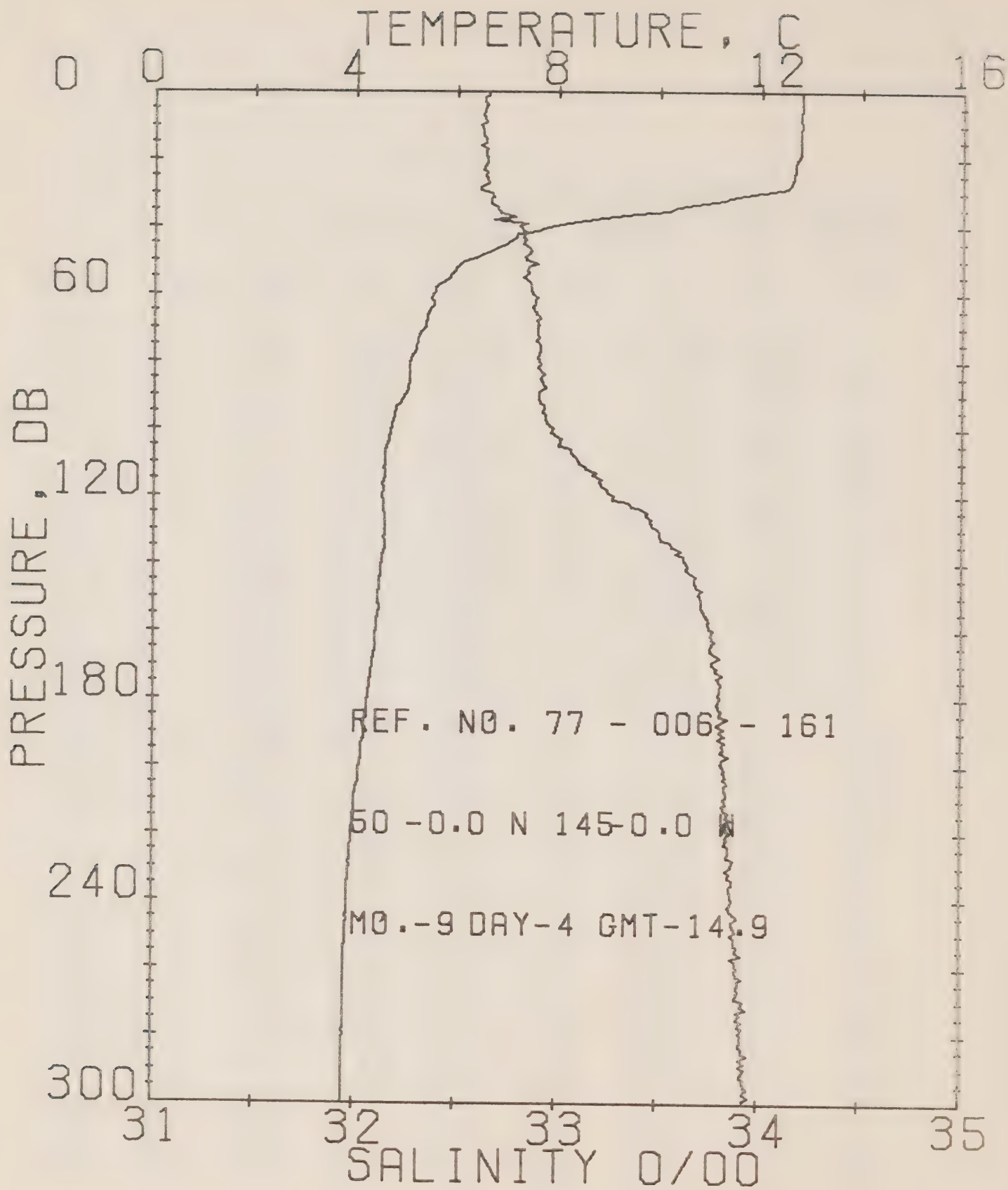
DATE 4/ 9/77

POSITION 50- 00N, 145- 00W

GMT 8.7

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.68	32.62	0	24.63	331.4	.00	.00	1497.
5	12.68	32.62	5	24.64	331.3	.17	.00	1497.
10	12.68	32.61	10	24.63	332.2	.33	.02	1497.
15	12.52	32.63	15	24.66	327.7	.50	.04	1497.
20	12.49	32.63	20	24.68	327.2	.66	.07	1497.
25	12.52	32.61	25	24.70	326.0	.82	.10	1496.
30	11.23	32.69	30	24.96	301.3	.98	.15	1492.
35	9.77	32.74	35	25.25	273.5	1.13	.20	1487.
40	9.06	32.76	40	25.38	261.1	1.26	.25	1485.
45	7.93	32.83	45	25.61	239.8	1.38	.30	1481.
50	6.61	32.87	50	25.82	219.1	1.50	.36	1476.
55	5.62	32.89	55	25.93	208.6	1.61	.41	1472.
60	5.42	32.89	60	25.96	203.7	1.71	.47	1471.
65	5.20	32.89	65	26.01	201.3	1.81	.54	1470.
70	5.03	32.91	70	26.04	198.3	1.91	.61	1469.
75	4.95	32.96	75	26.09	194.0	2.01	.66	1469.
80	4.93	32.96	80	26.09	193.5	2.10	.70	1469.
90	4.77	32.96	89	26.11	192.0	2.30	.92	1469.
100	4.62	33.00	99	26.16	187.5	2.49	1.11	1463.
110	4.63	33.14	109	26.26	177.6	2.67	1.30	1469.
120	4.69	33.39	119	26.46	159.0	2.84	1.50	1470.
130	4.71	33.57	129	26.60	146.1	2.99	1.70	1470.
140	4.60	33.68	139	26.70	136.4	3.13	1.89	1470.
150	4.52	33.78	149	26.79	128.4	3.27	2.09	1470.
160	4.42	33.81	159	26.82	125.4	3.39	2.29	1470.
170	4.36	33.80	169	26.82	125.4	3.52	2.50	1470.
180	4.25	33.84	179	26.86	121.6	3.64	2.72	1469.
190	4.19	33.83	189	26.86	121.5	3.76	2.95	1469.
200	4.15	33.84	199	26.87	120.7	3.88	3.19	1469.
210	4.10	33.86	209	26.89	118.6	4.00	3.44	1469.
220	4.04	33.86	210	26.90	118.3	4.12	3.70	1469.
230	4.02	33.89	228	26.92	116.0	4.24	3.97	1469.
240	3.92	33.84	238	26.90	118.2	4.36	4.24	1469.
250	3.95	33.92	248	26.95	113.3	4.47	4.53	1469.
260	3.90	33.90	258	26.94	114.0	4.58	4.83	1469.
270	3.82	33.92	268	26.97	112.0	4.70	5.13	1469.
280	3.77	33.94	278	26.99	109.9	4.81	5.45	1469.
290	3.74	33.95	288	27.00	109.2	4.92	5.77	1469.
300	3.73	33.94	298	26.99	109.7	5.03	6.10	1469.





## OFFSHORE OCEANOGRAPHY GROUP

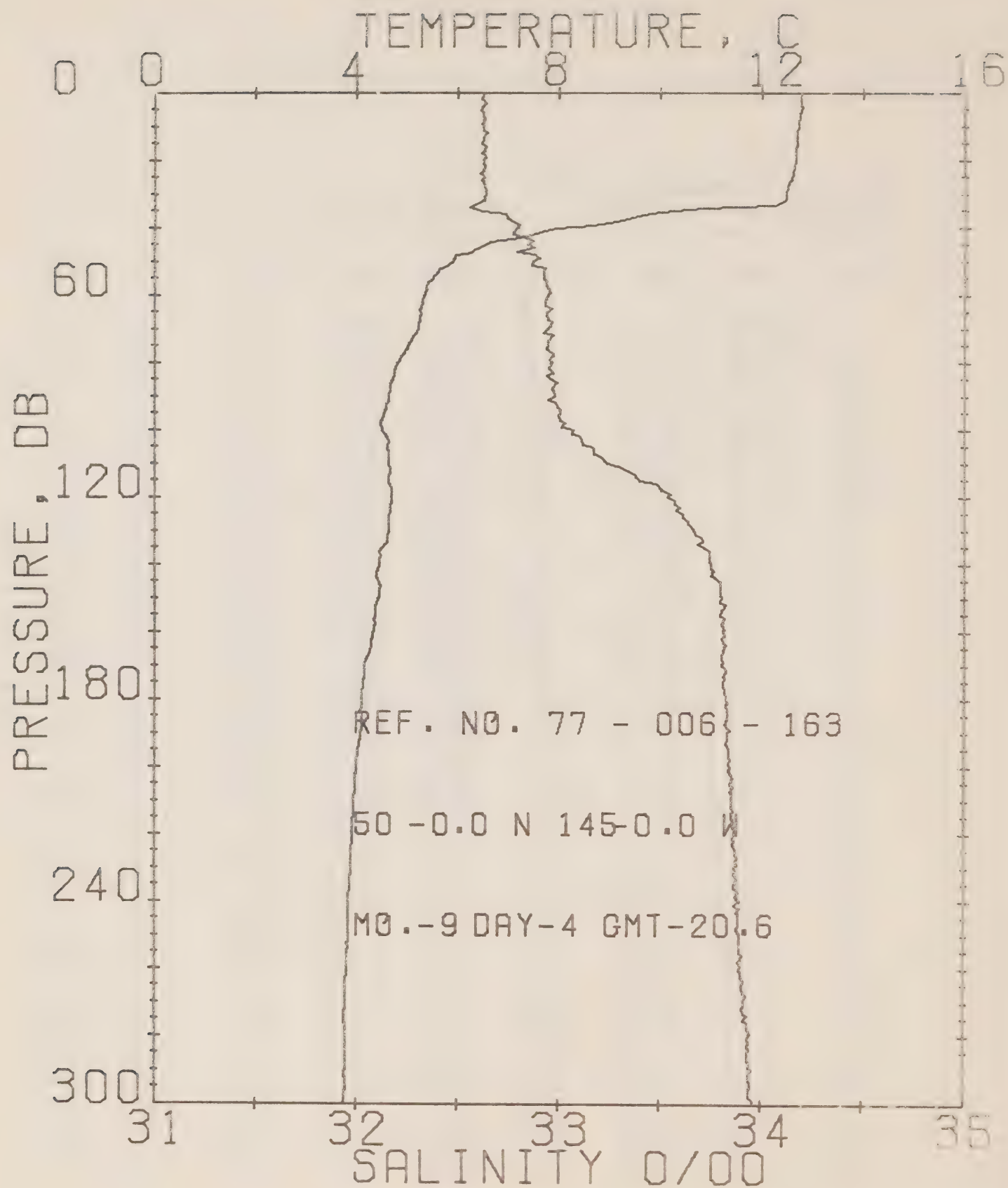
REFERENCE NO. 77- 8-161

DATE 4/ 9/77

POSITION 50- .0N, 145- .0W

GMT 14.9

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.80	32.66	0	24.64	331.0	.00	.00	1497.
5	12.79	32.64	5	24.65	332.4	.17	.00	1497.
10	12.79	32.61	10	24.61	333.9	.33	.02	1497.
15	12.78	32.64	15	24.63	332.0	.50	.04	1497.
20	12.69	32.65	20	24.65	330.0	.66	.07	1497.
25	12.64	32.64	25	24.66	329.8	.83	.11	1497.
30	11.63	32.66	30	24.83	313.5	.99	.15	1494.
35	10.19	32.71	35	25.15	282.6	1.14	.20	1489.
40	7.83	32.81	40	25.61	239.7	1.27	.25	1480.
45	6.99	32.83	45	25.73	227.3	1.30	.30	1477.
50	6.18	32.84	50	25.85	216.4	1.50	.35	1474.
55	5.65	32.85	55	25.88	213.6	1.60	.41	1472.
60	5.53	32.87	60	25.96	206.4	1.71	.47	1471.
65	5.45	32.88	65	25.97	204.9	1.81	.54	1471.
70	5.35	32.90	70	26.00	202.5	1.91	.61	1471.
75	5.20	32.91	75	26.02	200.1	2.01	.65	1470.
80	5.07	32.91	80	26.03	199.3	2.11	.70	1470.
90	4.96	32.91	89	26.05	198.1	2.31	.90	1470.
100	4.70	32.98	99	26.13	190.1	2.50	1.12	1469.
110	4.60	33.10	109	26.24	179.5	2.60	1.32	1469.
120	4.55	33.28	119	26.30	166.2	2.86	1.52	1469.
130	4.58	33.50	129	26.56	150.0	3.02	1.72	1469.
140	4.52	33.64	139	26.67	138.9	3.16	1.92	1469.
150	4.47	33.71	149	26.73	133.2	3.30	2.12	1470.
160	4.41	33.77	159	26.79	128.3	3.43	2.33	1470.
170	4.34	33.77	169	26.80	127.7	3.56	2.54	1469.
180	4.25	33.81	179	26.84	123.8	3.68	2.76	1469.
190	4.19	33.81	189	26.84	123.3	3.81	3.00	1469.
200	4.08	33.82	199	26.86	121.2	3.93	3.24	1469.
210	3.99	33.83	209	26.88	120.1	4.05	3.45	1469.
220	3.94	33.86	218	26.91	117.3	4.17	3.75	1469.
230	3.90	33.87	228	26.92	116.3	4.28	4.02	1469.
240	3.86	33.87	238	26.93	115.3	4.40	4.30	1469.
250	3.84	33.87	248	26.93	115.3	4.52	4.58	1469.
260	3.81	33.90	258	26.95	113.1	4.63	4.80	1469.
270	3.80	33.93	268	26.98	110.9	4.74	5.19	1469.
280	3.80	33.92	278	26.97	111.8	4.85	5.50	1469.
290	3.79	33.94	288	26.98	110.4	4.97	5.82	1469.
300	3.79	33.93	298	26.98	111.0	5.08	6.15	1469.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6-163

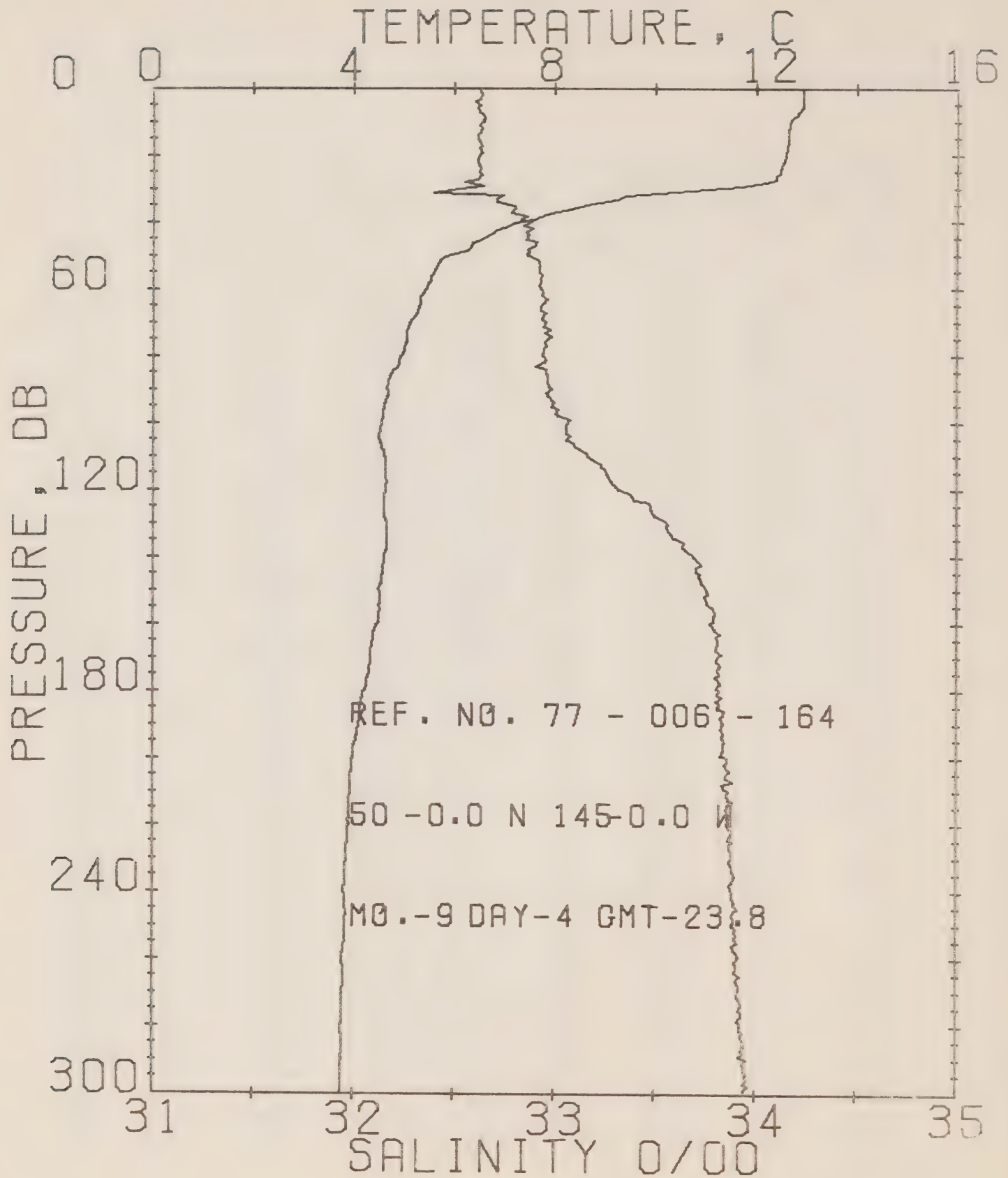
DATE 4/ 9/77

POSITION 50- .0N, 145- .0W

GMI 20.6

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. LN	SOUND
0	12.77	32.63	0	24.62	332.5	.00	.00	1497.
5	12.78	32.62	5	24.61	333.6	.17	.00	1497.
10	12.71	32.63	10	24.64	331.4	.33	.02	1497.
15	12.69	32.62	15	24.63	331.8	.50	.04	1497.
20	12.66	32.63	20	24.65	330.7	.66	.07	1497.
25	12.56	32.64	25	24.67	328.9	.83	.11	1497.
30	12.48	32.64	30	24.69	326.9	.99	.15	1497.
35	10.08	32.61	35	25.10	287.7	1.15	.20	1488.
40	8.04	32.60	40	25.56	243.6	1.28	.25	1481.
45	6.54	32.85	45	25.81	220.0	1.40	.30	1475.
50	5.88	32.87	50	25.91	210.6	1.51	.36	1473.
55	5.49	32.93	55	26.00	201.9	1.61	.41	1471.
60	5.33	32.95	60	26.04	198.7	1.71	.47	1471.
65	5.27	32.94	65	26.04	198.5	1.81	.53	1470.
70	5.22	32.95	70	26.05	197.8	1.91	.60	1470.
75	5.01	32.95	75	26.07	195.3	2.01	.67	1470.
80	4.80	32.97	80	26.11	191.9	2.10	.75	1469.
90	4.64	32.98	89	26.14	189.0	2.20	.92	1463.
100	4.51	33.06	99	26.22	181.6	2.48	1.10	1466.
110	4.64	33.24	109	26.35	169.7	2.66	1.26	1469.
120	4.70	33.54	119	26.58	148.0	2.81	1.47	1470.
130	4.63	33.66	129	26.66	138.2	2.96	1.66	1470.
140	4.45	33.75	139	26.77	130.0	3.09	1.86	1469.
150	4.42	33.80	149	26.81	125.7	3.22	2.02	1469.
160	4.33	33.81	159	26.83	124.0	3.34	2.22	1469.
170	4.16	33.81	169	26.85	122.7	3.46	2.43	1469.
180	4.10	33.83	179	26.87	120.9	3.59	2.64	1469.
190	4.07	33.84	189	26.86	119.9	3.71	2.87	1469.
200	3.99	33.84	199	26.89	118.6	3.83	3.11	1469.
210	3.96	33.85	209	26.90	117.6	3.94	3.35	1469.
220	3.92	33.87	216	26.92	116.2	4.06	3.61	1469.
230	3.89	33.87	228	26.92	116.0	4.18	3.88	1469.
240	3.84	33.89	236	26.94	114.0	4.29	4.15	1469.
250	3.83	33.89	248	26.95	113.8	4.41	4.44	1469.
260	3.82	33.90	258	26.95	113.5	4.52	4.73	1469.
270	3.78	33.91	268	26.97	112.1	4.63	5.04	1469.
280	3.79	33.94	278	26.98	110.4	4.74	5.35	1469.
290	3.77	33.95	288	27.00	109.1	4.85	5.67	1469.
300	3.77	33.97	298	27.01	108.0	4.96	6.00	1469.





## OFFSHORE OCEANOGRAPHY GROUP

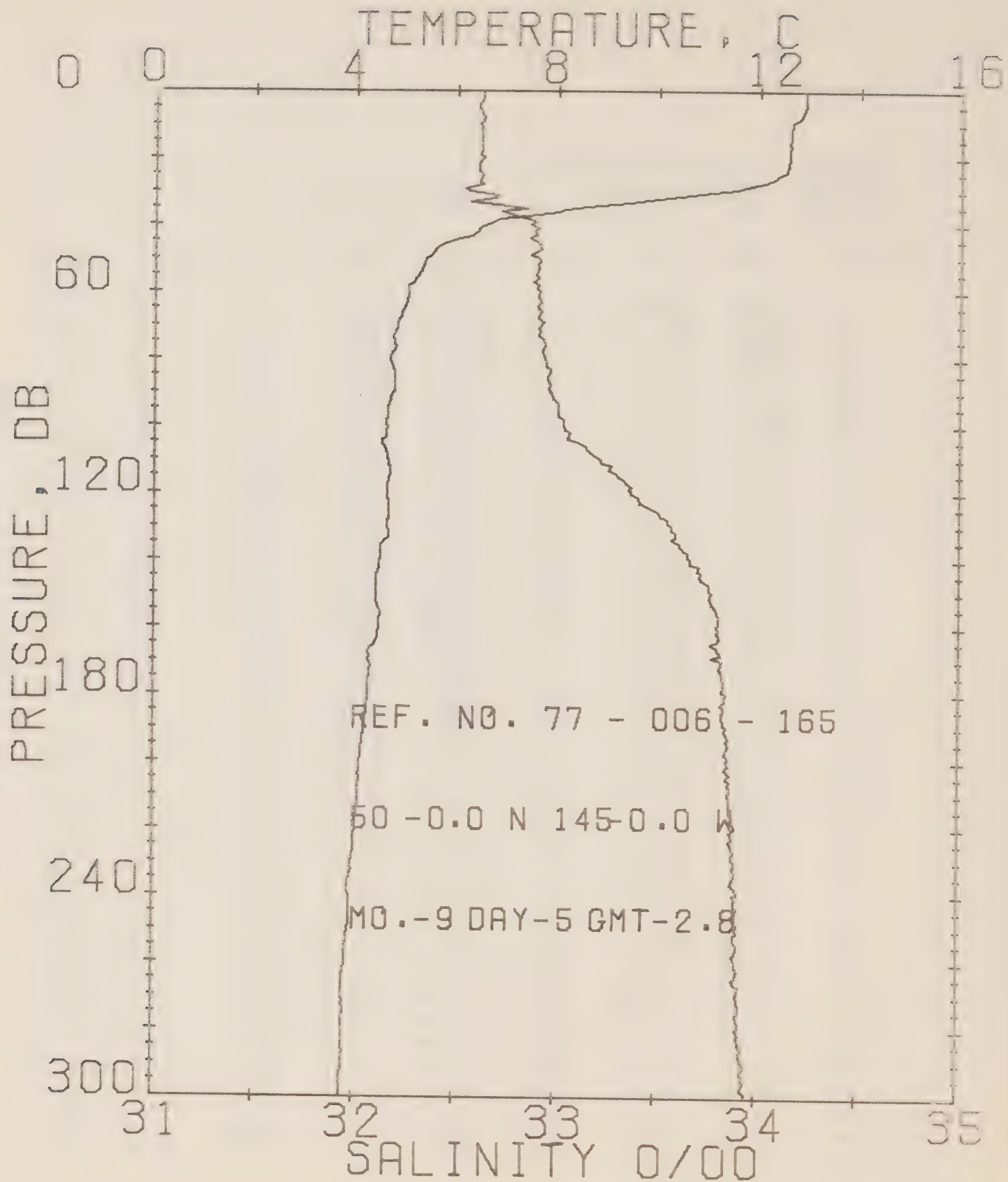
REFERENCE NO. 77- 6-164

DATE 4/ 9/77

POSITION 30- .0N, 145- .0W

GMT 23.8

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.94	32.83	0	24.60	335.2	.00	.00	1498.
5	12.93	32.83	5	24.60	335.4	.17	.00	1498.
10	12.88	32.84	10	24.66	329.6	.33	.02	1497.
15	12.84	32.82	15	24.64	331.0	.50	.04	1497.
20	12.59	32.83	20	24.66	329.7	.66	.07	1497.
25	12.47	32.83	25	24.68	327.4	.83	.11	1497.
30	11.06	32.54	30	24.88	309.0	.99	.15	1492.
35	8.54	32.79	35	25.48	251.1	1.13	.20	1483.
40	7.23	32.88	40	25.74	226.7	1.25	.24	1478.
45	6.54	32.86	45	25.82	219.5	1.36	.29	1475.
50	5.84	32.87	50	25.91	210.3	1.47	.34	1472.
55	5.80	32.92	55	25.99	203.5	1.57	.40	1472.
60	5.43	32.93	60	26.01	200.9	1.67	.46	1471.
65	5.30	32.93	65	26.03	199.5	1.77	.52	1471.
70	5.11	32.96	70	26.07	195.6	1.87	.59	1470.
75	5.07	32.97	75	26.08	194.6	1.97	.66	1470.
80	4.95	32.94	80	26.07	195.2	2.06	.74	1469.
90	4.70	32.99	89	26.14	189.1	2.26	.90	1469.
100	4.57	33.07	99	26.22	181.8	2.44	1.08	1468.
110	4.63	33.16	109	26.29	175.4	2.62	1.26	1469.
120	4.64	33.32	119	26.41	164.0	2.79	1.47	1469.
130	4.67	33.56	129	26.66	146.0	2.95	1.67	1470.
140	4.61	33.69	139	26.71	135.8	3.09	1.87	1470.
150	4.52	33.76	149	26.77	130.2	3.22	2.06	1470.
160	4.47	33.78	159	26.79	128.4	3.35	2.27	1470.
170	4.34	33.82	169	26.83	124.1	3.47	2.46	1469.
180	4.20	33.82	179	26.85	122.5	3.60	2.70	1469.
190	4.10	33.84	189	26.86	119.8	3.72	2.93	1469.
200	3.99	33.86	199	26.90	117.8	3.84	3.16	1469.
210	3.94	33.86	209	26.91	116.8	3.96	3.41	1469.
220	3.90	33.86	216	26.91	116.6	4.07	3.66	1468.
230	3.86	33.88	226	26.93	114.7	4.19	3.93	1469.
240	3.83	33.88	236	26.94	114.4	4.30	4.20	1469.
250	3.85	33.88	246	26.94	114.6	4.42	4.49	1469.
260	3.80	33.91	256	26.96	112.3	4.53	4.76	1469.
270	3.80	33.92	266	26.97	111.8	4.64	5.06	1469.
280	3.77	33.93	276	26.98	110.7	4.75	5.39	1469.
290	3.77	33.96	286	27.01	108.5	4.86	5.71	1469.
300	3.76	33.96	296	27.01	108.5	4.97	6.04	1469.



## OFFSHORE OCEANOGRAPHY GROUP

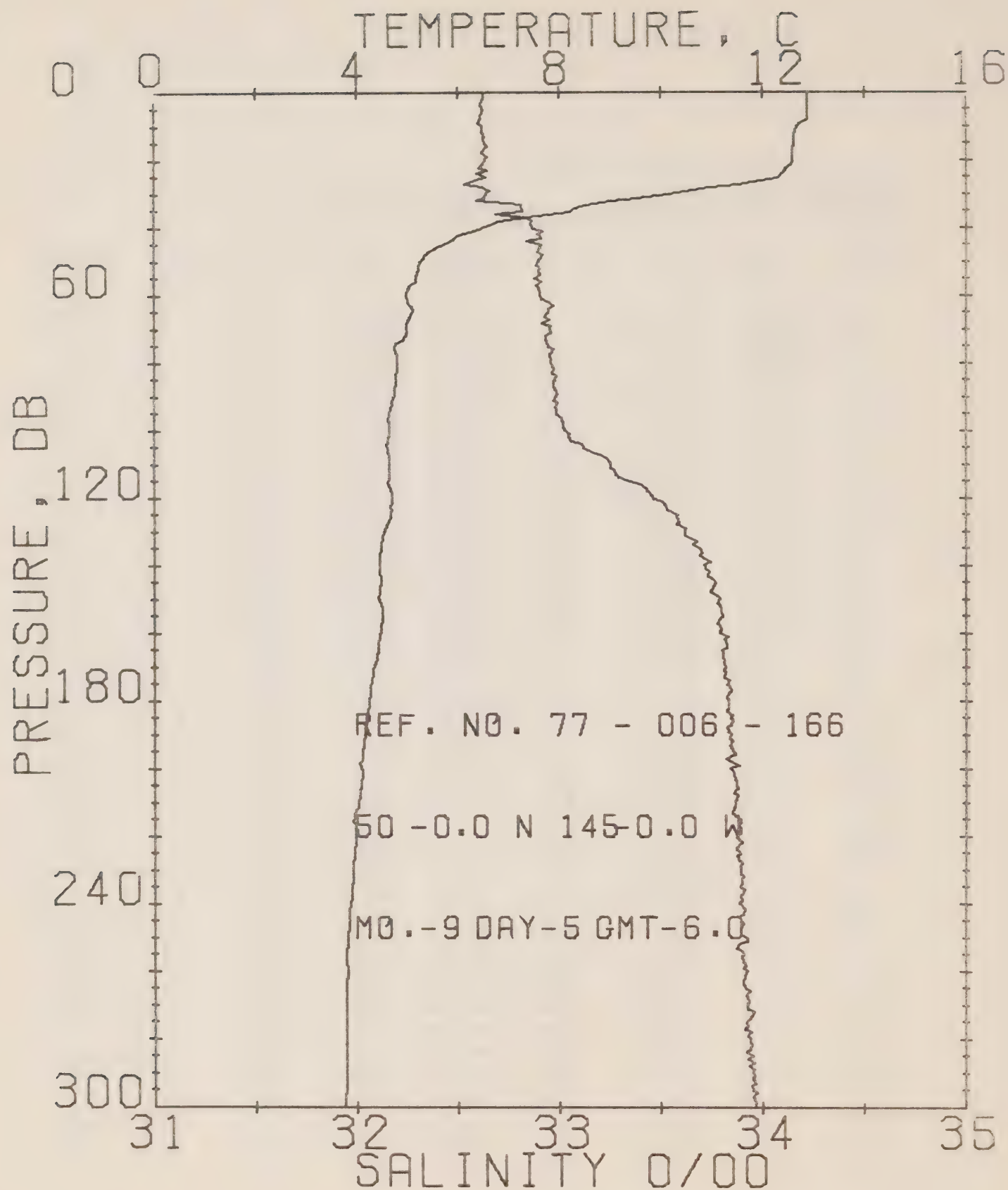
REFERENCE NO. 77- 8-165

DATE 5/ 9/77

POSITION 50- .0N, 145- .0W GMT 2.8

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.92	32.83	0	24.60	335.2	.00	.00	1498.
5	12.89	32.81	5	24.59	336.3	.17	.00	1498.
10	12.85	32.81	10	24.64	331.4	.33	.02	1497.
15	12.80	32.82	15	24.65	330.1	.50	.04	1497.
20	12.58	32.83	20	24.66	329.3	.66	.07	1497.
25	12.54	32.82	25	24.70	325.4	.83	.11	1496.
30	11.10	32.56	30	24.88	308.4	.99	.15	1492.
35	8.19	32.84	35	25.57	242.9	1.13	.20	1481.
40	6.54	32.87	40	25.83	218.5	1.24	.24	1475.
45	5.80	32.90	45	25.94	207.7	1.35	.29	1472.
50	5.39	32.90	50	25.99	202.7	1.45	.34	1471.
55	5.23	32.90	55	26.01	201.3	1.55	.39	1470.
60	5.04	32.91	60	26.04	198.2	1.65	.45	1469.
65	4.93	32.90	65	26.05	197.7	1.75	.51	1469.
70	4.83	32.92	70	26.07	195.6	1.85	.58	1469.
75	4.78	32.94	75	26.09	193.4	1.95	.65	1469.
80	4.70	32.94	80	26.10	192.6	2.05	.73	1468.
90	4.75	32.97	89	26.12	191.1	2.24	.89	1469.
100	4.63	33.03	99	26.18	185.2	2.43	1.08	1468.
110	4.66	33.21	109	26.32	172.3	2.61	1.27	1469.
120	4.64	33.37	119	26.45	159.9	2.77	1.46	1469.
130	4.65	33.57	129	26.60	145.5	2.92	1.66	1470.
140	4.49	33.66	139	26.70	136.6	3.06	1.85	1469.
150	4.43	33.77	149	26.79	128.2	3.20	2.05	1469.
160	4.47	33.80	159	26.81	126.4	3.32	2.25	1470.
170	4.30	33.83	169	26.85	122.9	3.45	2.46	1469.
180	4.27	33.84	179	26.86	121.2	3.57	2.68	1469.
190	4.18	33.85	189	26.87	120.3	3.69	2.91	1469.
200	4.11	33.85	199	26.88	119.4	3.81	3.14	1469.
210	4.08	33.86	209	26.89	118.5	3.93	3.39	1469.
220	4.02	33.89	218	26.93	115.5	4.05	3.65	1469.
230	3.95	33.89	226	26.93	114.8	4.17	3.91	1469.
240	3.92	33.89	238	26.93	114.9	4.28	4.19	1469.
250	3.89	33.90	248	26.95	113.6	4.39	4.47	1469.
260	3.83	33.90	258	26.95	113.5	4.51	4.77	1469.
270	3.79	33.90	268	26.96	112.7	4.62	5.07	1469.
280	3.80	33.91	278	26.96	112.7	4.73	5.39	1469.
290	3.78	33.94	286	26.99	110.2	4.84	5.71	1469.
300	3.75	33.94	296	26.99	109.9	4.95	6.04	1469.





## OFFSHORE OCEANOGRAPHY GROUP

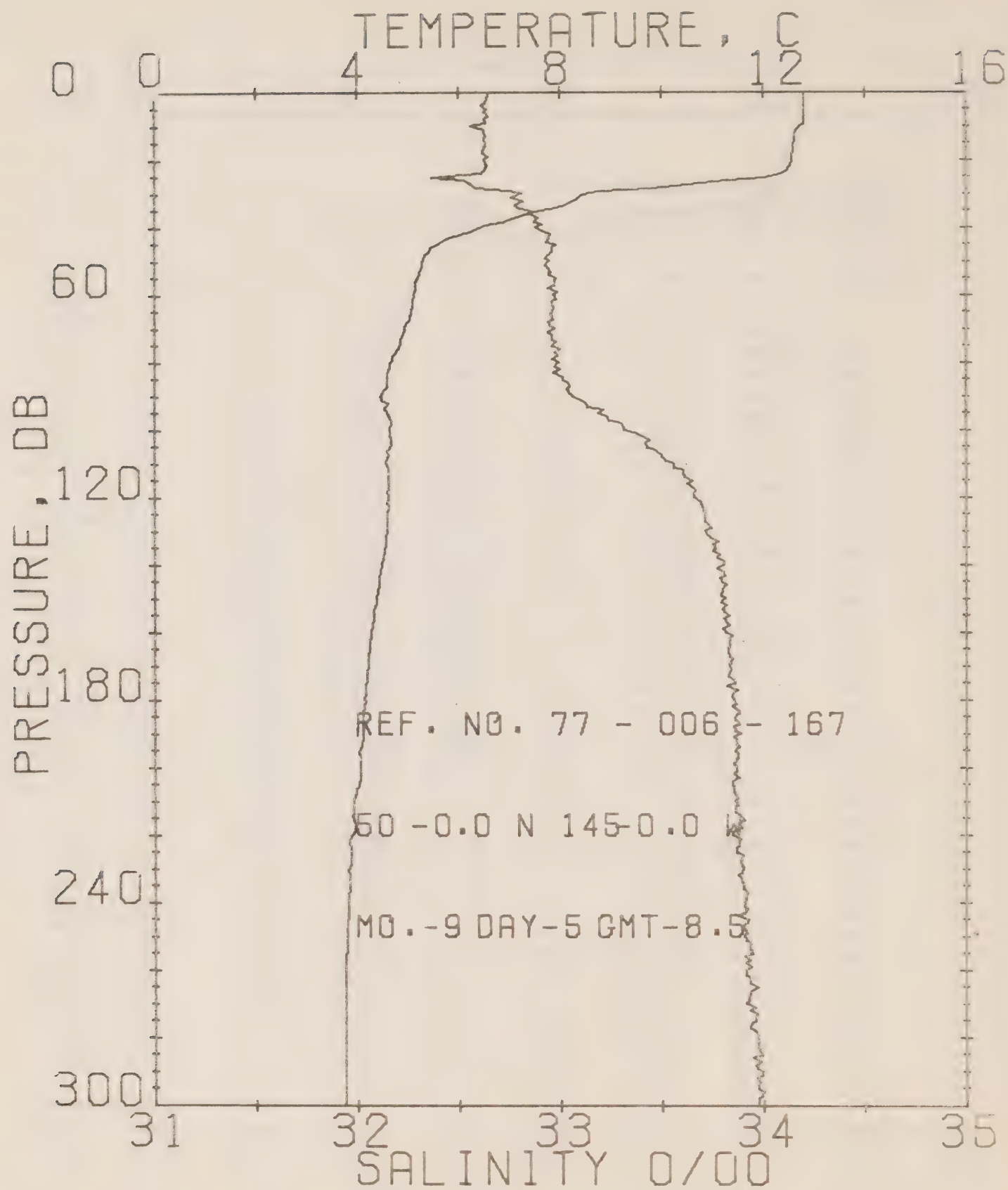
REFERENCE NO. 77- 6-166

DATE 5/ 9/77

POSITION 30- 00N, 145- 00W

GMT 6.0

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.68	32.63	0	24.60	334.5	.00	.00	1498.
5	12.68	32.63	5	24.60	334.7	.17	.00	1498.
10	12.65	32.62	10	24.64	331.2	.33	.02	1497.
15	12.60	32.63	15	24.66	329.3	.50	.04	1497.
20	12.58	32.63	20	24.66	329.0	.66	.07	1497.
25	12.51	32.63	25	24.71	324.5	.83	.11	1496.
30	10.21	32.64	30	25.10	287.8	.98	.15	1489.
35	8.23	32.62	35	25.55	244.8	1.11	.19	1482.
40	6.45	32.67	40	25.84	217.2	1.23	.24	1475.
45	5.65	32.91	45	25.97	205.0	1.33	.26	1472.
50	5.25	32.90	50	26.01	201.3	1.44	.30	1470.
55	5.17	32.88	55	26.00	201.7	1.54	.36	1470.
60	4.99	32.90	60	26.04	198.2	1.64	.44	1469.
65	5.09	32.95	65	26.06	196.3	1.73	.50	1470.
70	4.99	32.95	70	26.08	194.6	1.83	.57	1469.
75	4.74	32.95	75	26.10	192.5	1.93	.64	1468.
80	4.80	32.96	80	26.11	192.2	2.03	.72	1469.
90	4.73	32.99	89	26.13	189.7	2.22	.89	1469.
100	4.63	33.03	99	26.18	185.6	2.40	1.07	1468.
110	4.64	33.25	109	26.35	169.1	2.58	1.26	1469.
120	4.68	33.47	119	26.52	153.5	2.74	1.45	1470.
130	4.55	33.62	129	26.66	140.4	2.89	1.63	1469.
140	4.44	33.72	139	26.74	132.4	3.02	1.82	1469.
150	4.45	33.79	149	26.80	127.0	3.15	2.01	1470.
160	4.46	33.80	159	26.80	126.8	3.28	2.21	1470.
170	4.33	33.82	169	26.84	123.7	3.41	2.42	1469.
180	4.25	33.83	179	26.85	122.1	3.53	2.64	1469.
190	4.16	33.85	189	26.88	120.0	3.65	2.87	1469.
200	4.10	33.84	199	26.88	119.7	3.77	3.11	1469.
210	4.03	33.87	208	26.90	117.5	3.89	3.35	1469.
220	3.97	33.88	218	26.92	116.0	4.00	3.61	1469.
230	3.91	33.89	228	26.94	114.5	4.12	3.87	1469.
240	3.88	33.89	238	26.93	114.8	4.23	4.14	1469.
250	3.82	33.92	248	26.97	111.8	4.35	4.43	1469.
260	3.80	33.93	258	26.98	110.9	4.46	4.72	1469.
270	3.79	33.92	268	26.97	111.2	4.57	5.02	1469.
280	3.79	33.94	278	26.99	110.0	4.68	5.30	1469.
290	3.79	33.95	288	27.00	109.2	4.79	5.60	1469.
300	3.76	33.97	298	27.02	107.4	4.90	5.97	1469.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6-167

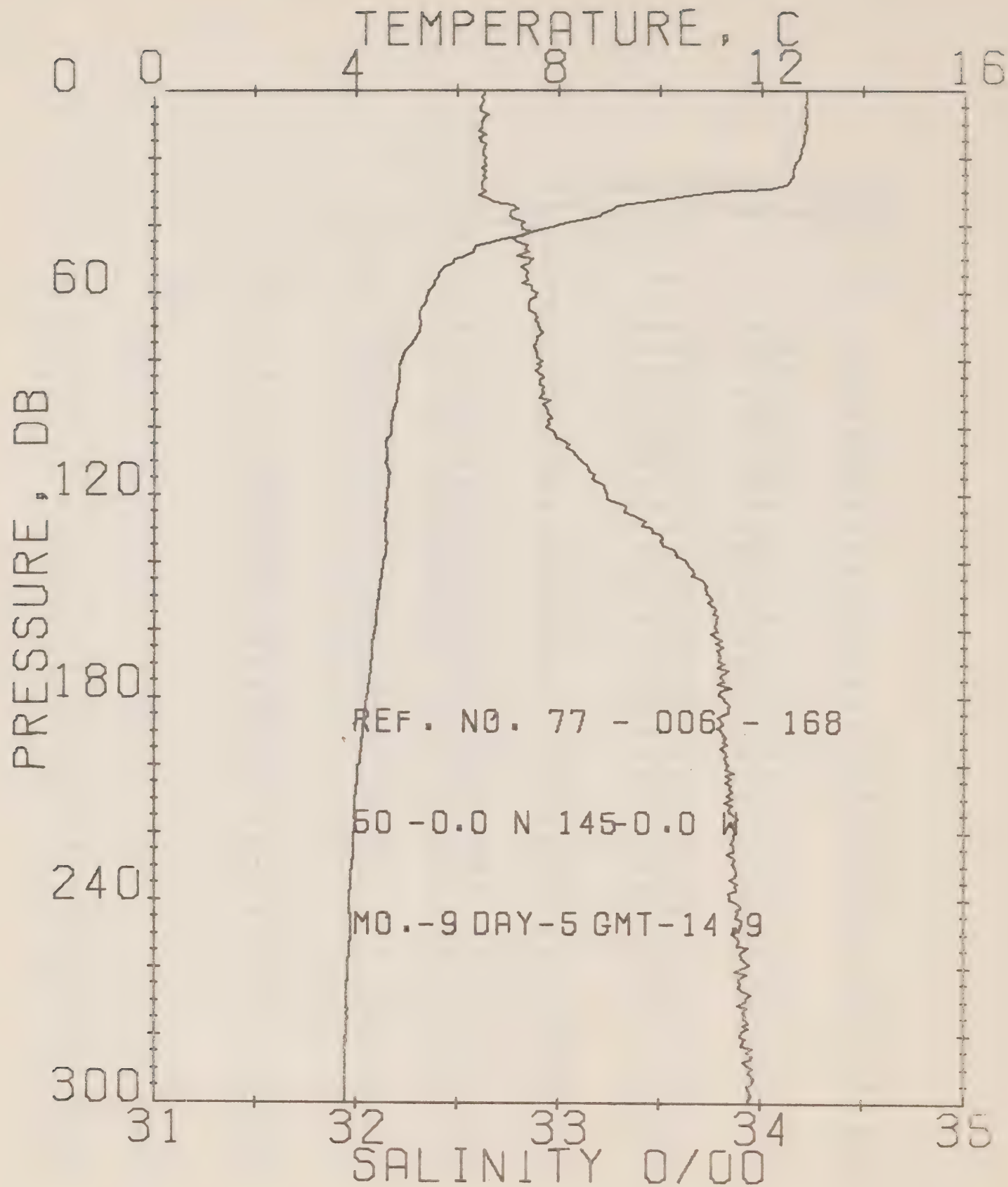
DATE 5/ 9/77

POSITION 50- .0N, 145- .0W

GMT 8.5

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.80	32.84	0	24.63	331.8	.00	.00	1497.
5	12.80	32.84	5	24.63	332.3	.17	.00	1497.
10	12.72	32.57	10	24.59	336.4	.33	.02	1497.
15	12.59	32.63	15	24.66	329.3	.50	.04	1497.
20	12.55	32.63	20	24.67	328.9	.66	.07	1497.
25	12.03	32.57	25	24.57	338.4	.83	.11	1495.
30	8.50	32.80	30	25.50	249.6	.97	.15	1482.
35	7.54	32.86	35	25.68	232.5	1.10	.19	1479.
40	6.41	32.88	40	25.85	216.1	1.21	.23	1475.
45	5.56	32.97	45	26.03	199.3	1.31	.27	1471.
50	5.28	32.94	50	26.04	198.4	1.41	.32	1470.
55	5.19	32.98	55	26.08	194.8	1.51	.37	1470.
60	5.12	32.97	60	26.08	194.7	1.61	.43	1470.
65	5.07	32.96	65	26.08	194.8	1.70	.49	1470.
70	4.93	32.97	70	26.10	192.6	1.80	.56	1469.
75	4.84	32.96	75	26.10	192.5	1.90	.63	1469.
80	4.65	32.99	80	26.15	188.3	1.99	.71	1468.
90	4.46	33.06	89	26.22	181.3	2.18	.87	1468.
100	4.63	33.31	99	26.40	164.1	2.35	1.03	1469.
110	4.58	33.35	109	26.60	145.5	2.50	1.20	1469.
120	4.60	33.06	119	26.68	138.2	2.65	1.36	1470.
130	4.58	33.72	129	26.73	133.7	2.78	1.54	1470.
140	4.48	33.81	139	26.81	125.8	2.91	1.71	1470.
150	4.37	33.81	149	26.82	124.9	3.04	1.90	1469.
160	4.27	33.82	159	26.84	123.3	3.16	2.10	1469.
170	4.20	33.84	169	26.86	121.2	3.28	2.30	1469.
180	4.15	33.85	179	26.88	119.5	3.40	2.51	1469.
190	4.11	33.88	189	26.91	117.0	3.52	2.74	1469.
200	4.06	33.86	199	26.90	117.9	3.64	2.97	1469.
210	3.91	33.88	208	26.91	116.6	3.75	3.22	1468.
220	3.86	33.85	218	26.91	117.1	3.87	3.47	1468.
230	3.82	33.90	228	26.95	113.0	3.99	3.73	1468.
240	3.81	33.91	238	26.96	112.2	4.10	4.01	1468.
250	3.78	33.91	248	26.96	112.1	4.21	4.29	1469.
260	3.76	33.92	258	26.97	111.2	4.32	4.57	1469.
270	3.76	33.92	268	26.97	111.4	4.43	4.87	1469.
280	3.75	33.97	278	27.02	107.4	4.54	5.18	1469.
290	3.75	33.99	288	27.03	106.1	4.65	5.49	1469.
300	3.75	33.99	298	27.03	105.9	4.75	5.81	1469.





## OFFSHORE OCEANOGRAPHY GROUP

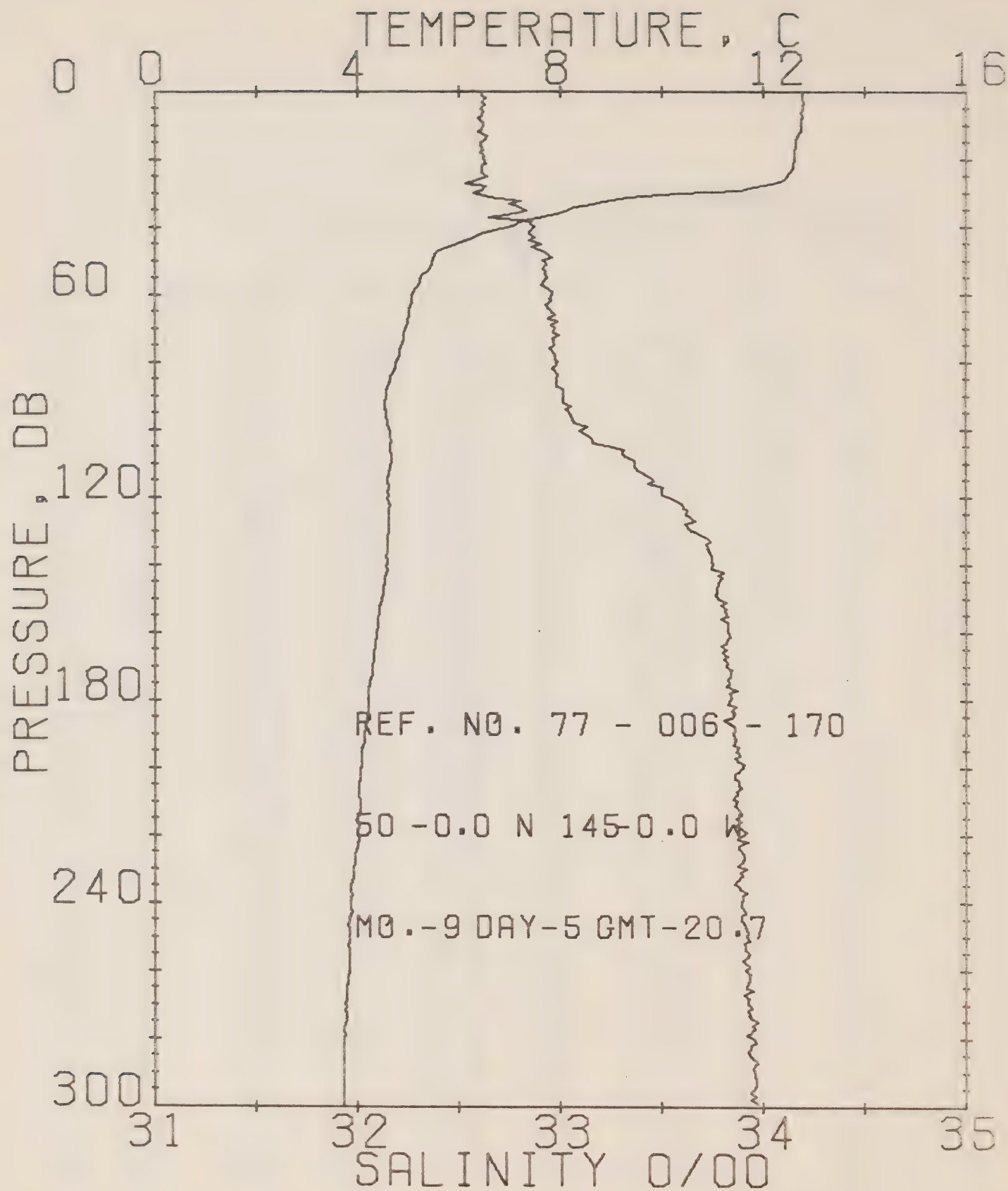
REFERENCE NO. 77- 6-168

DATE 5/ 9/77

POSITION 50- .0N, 145- .0W

GMT 14.9

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.87	32.64	0	24.61	333.8	.00	.00	1497.
5	12.87	32.61	5	24.60	335.3	.17	.00	1498.
10	12.87	32.62	10	24.60	335.0	.33	.02	1498.
15	12.82	32.62	15	24.61	334.3	.50	.04	1498.
20	12.74	32.64	20	24.64	331.5	.67	.07	1497.
25	12.61	32.63	25	24.66	329.9	.83	.11	1497.
30	11.18	32.64	30	24.93	303.8	1.00	.15	1492.
35	9.09	32.80	35	25.40	258.9	1.14	.20	1485.
40	7.96	32.81	40	25.59	241.3	1.26	.25	1481.
45	6.65	32.80	45	25.75	225.5	1.38	.30	1476.
50	5.96	32.87	50	25.90	211.6	1.49	.35	1473.
55	5.63	32.84	55	25.92	210.1	1.59	.41	1472.
60	5.43	32.89	60	25.96	204.4	1.70	.47	1471.
65	5.26	32.85	65	25.97	205.1	1.80	.53	1470.
70	5.26	32.90	70	26.01	201.4	1.90	.60	1470.
75	5.10	32.89	75	26.01	200.9	2.00	.66	1470.
80	4.90	32.91	80	26.06	196.8	2.10	.75	1469.
90	4.81	32.93	89	26.08	195.0	2.30	.92	1469.
100	4.70	32.94	99	26.10	192.9	2.49	1.11	1469.
110	4.59	33.11	109	26.25	179.0	2.68	1.31	1469.
120	4.62	33.24	119	26.34	169.9	2.85	1.51	1469.
130	4.59	33.46	129	26.53	152.9	3.01	1.72	1469.
140	4.53	33.64	139	26.67	139.3	3.16	1.92	1470.
150	4.44	33.75	149	26.77	130.2	3.29	2.12	1469.
160	4.37	33.78	159	26.80	126.8	3.42	2.32	1469.
170	4.28	33.82	169	26.84	123.1	3.55	2.54	1469.
180	4.20	33.81	179	26.85	122.9	3.67	2.70	1469.
190	4.13	33.81	189	26.85	122.7	3.79	2.99	1469.
200	4.05	33.84	199	26.88	119.6	3.92	3.23	1469.
210	3.98	33.86	209	26.90	117.4	4.03	3.48	1469.
220	3.96	33.87	218	26.92	116.4	4.15	3.73	1469.
230	3.91	33.87	228	26.92	116.5	4.27	4.00	1469.
240	3.87	33.85	238	26.90	117.6	4.38	4.26	1469.
250	3.89	33.86	248	26.92	116.5	4.50	4.57	1469.
260	3.83	33.92	258	26.97	111.5	4.61	4.86	1469.
270	3.82	33.92	268	26.97	111.5	4.72	5.16	1469.
280	3.80	33.90	278	26.96	113.0	4.84	5.48	1469.
290	3.80	33.95	288	27.00	109.1	4.95	5.80	1469.
300	3.77	33.97	298	27.01	107.8	5.06	6.10	1469.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8-170

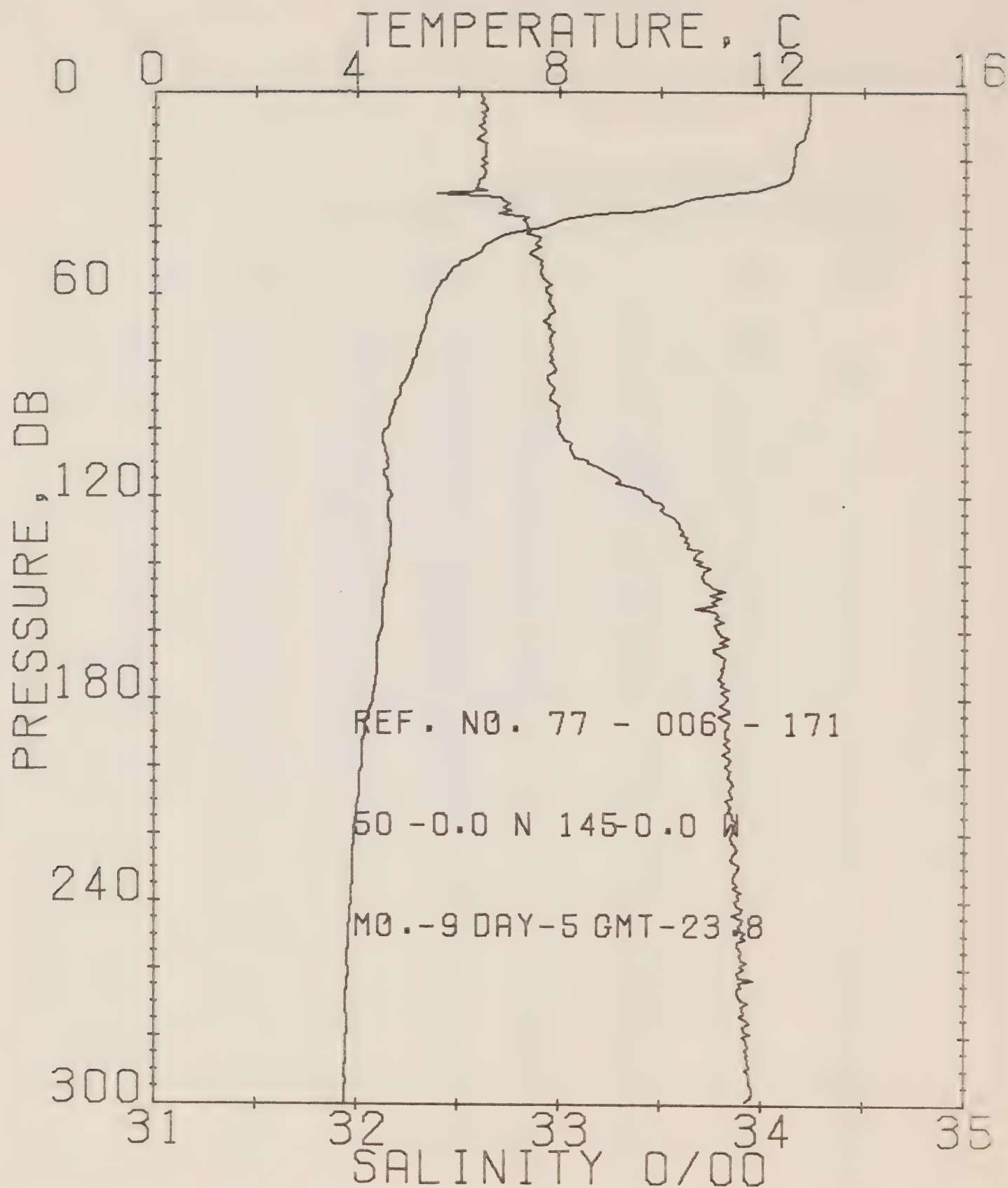
DATE 5/ 9/77

POSITION 50- .0N, 145- .0W

GMT 20.7

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.78	32.82	0	24.81	333.5	.00	.88	1497.
5	12.78	32.81	5	24.81	334.0	.17	.88	1497.
10	12.74	32.82	10	24.83	332.5	.33	.88	1497.
15	12.63	32.81	15	24.64	331.5	.50	.84	1497.
20	12.51	32.82	20	24.65	330.4	.66	.87	1497.
25	12.47	32.83	25	24.69	326.9	.83	.81	1497.
30	10.38	32.88	30	25.02	295.2	.99	.85	1489.
35	8.10	32.83	35	25.58	242.3	1.12	.89	1481.
40	6.98	32.87	40	25.77	223.8	1.24	.84	1477.
45	5.90	32.91	45	25.93	208.2	1.35	.89	1475.
50	5.47	32.91	50	25.99	202.8	1.45	.85	1471.
55	5.25	32.93	55	26.04	198.7	1.55	.89	1470.
60	5.07	32.96	60	26.06	195.0	1.65	.85	1470.
65	5.02	32.96	65	26.08	194.4	1.75	.81	1469.
70	4.95	32.97	70	26.10	192.9	1.84	.88	1469.
75	4.85	32.96	75	26.10	192.5	1.94	.85	1469.
80	4.76	32.98	80	26.13	190.1	2.04	.72	1469.
90	4.55	33.01	89	26.17	185.8	2.22	.89	1468.
100	4.53	33.11	99	26.24	179.7	2.41	1.00	1469.
110	4.64	33.37	109	26.45	160.2	2.58	1.29	1469.
120	4.59	33.52	119	26.57	148.2	2.73	1.48	1469.
130	4.61	33.84	129	26.67	139.4	2.87	1.81	1470.
140	4.56	33.76	139	26.76	130.6	3.01	1.79	1470.
150	4.48	33.78	149	26.79	127.9	3.13	1.98	1470.
160	4.38	33.83	159	26.84	123.6	3.26	2.18	1469.
170	4.30	33.82	169	26.84	123.2	3.38	2.38	1469.
180	4.21	33.84	179	26.87	121.1	3.50	2.60	1469.
190	4.14	33.86	189	26.88	119.3	3.63	2.83	1469.
200	4.06	33.90	199	26.93	115.0	3.74	3.08	1469.
210	4.04	33.87	208	26.91	117.4	3.86	3.31	1469.
220	4.02	33.90	218	26.93	114.9	3.98	3.58	1469.
230	3.93	33.92	228	26.96	112.5	4.09	3.82	1469.
240	3.88	33.89	238	26.94	114.2	4.21	4.10	1469.
250	3.85	33.92	248	26.97	111.9	4.32	4.38	1469.
260	3.83	33.92	258	26.96	112.1	4.43	4.67	1469.
270	3.78	33.93	268	26.98	110.9	4.54	4.97	1469.
280	3.74	33.95	278	27.00	108.3	4.65	5.28	1469.
290	3.74	33.96	288	27.01	108.1	4.76	5.59	1469.
300	3.76	33.96	298	27.01	108.2	4.87	5.92	1469.





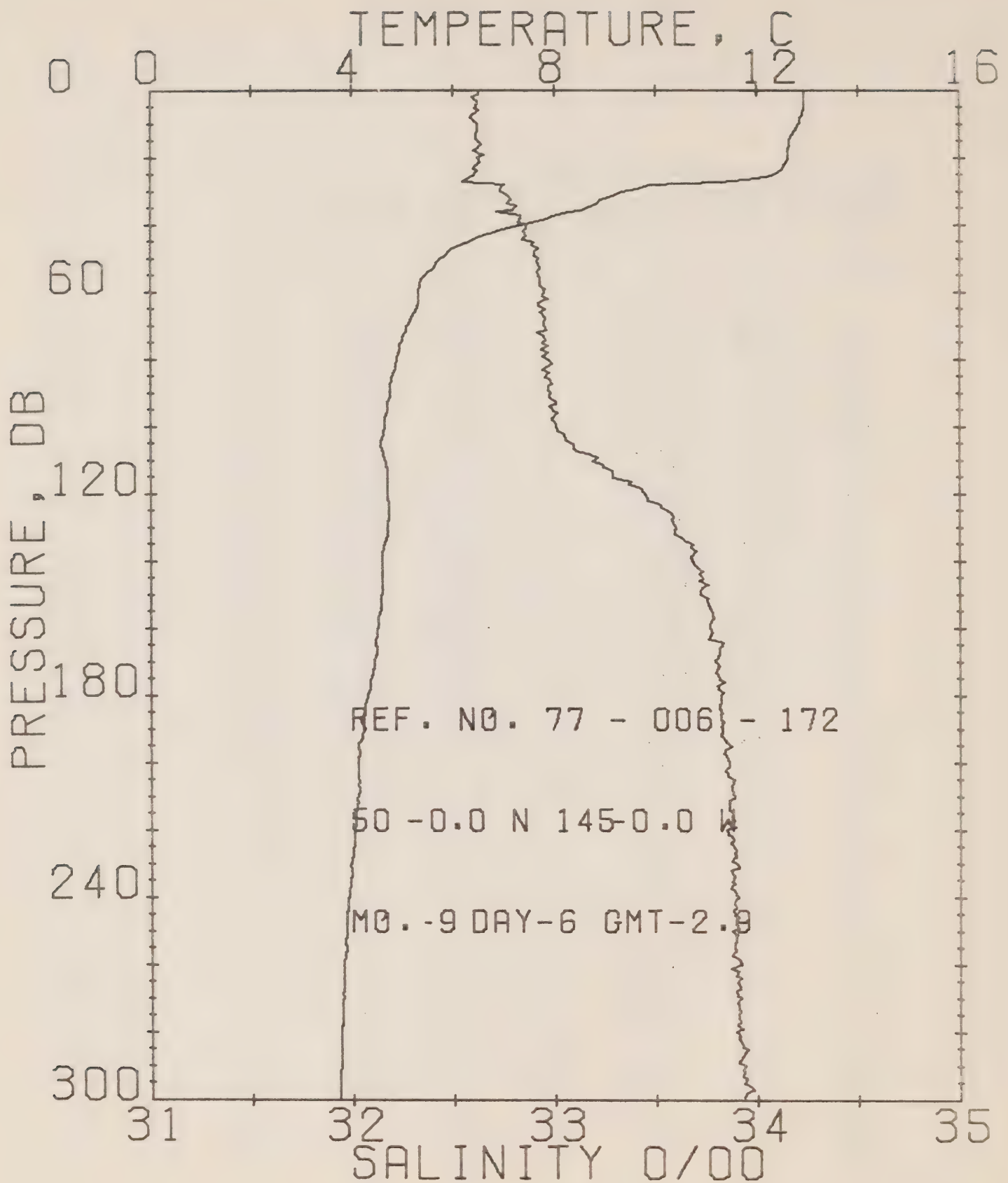
## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8-171

DATE 5/ 9/77

POSITION 50- 00N, 145- 00W, GMT 23.8

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA	TIME	SOUND
0	12.94	32.81	0	24.58	336.7	.00	1459.1	1494.
5	12.93	32.84	5	24.60	334.7	.17	1459.2	1495.
10	12.87	32.80	10	24.59	336.4	.34	1459.3	1498.
15	12.88	32.84	15	24.65	330.4	.50	1459.4	1497.
20	12.81	32.82	20	24.65	330.7	.67	1459.5	1497.
25	12.53	32.82	25	24.67	328.7	.83	1459.6	1497.
30	11.57	32.81	30	24.72	324.2	.99	1459.7	1497.
35	9.71	32.75	35	25.27	271.9	1.14	1459.8	1497.
40	7.70	32.84	40	25.65	235.9	1.26	1459.9	1480.
45	6.55	32.89	45	25.84	217.6	1.37	1460.0	1475.
50	6.09	32.91	50	25.91	210.2	1.48	1460.1	1473.
55	5.76	32.92	55	25.96	205.9	1.59	1460.2	1472.
60	5.51	32.95	60	26.02	200.4	1.69	1460.3	1471.
65	5.40	32.97	65	26.05	198.0	1.79	1460.4	1471.
70	5.33	32.95	70	26.05	199.0	1.89	1460.5	1471.
75	5.20	32.95	75	26.06	196.5	1.99	1460.6	1470.
80	5.08	32.96	80	26.07	195.6	2.08	1460.7	1470.
90	4.81	32.95	90	26.10	193.2	2.28	1460.8	1469.
100	4.55	32.99	100	26.15	187.3	2.47	1460.9	1469.
110	4.81	33.14	110	26.27	177.0	2.65	1461.0	1469.
120	4.86	33.44	120	26.50	155.3	2.81	1461.1	1470.
130	4.87	33.51	130	26.63	142.6	2.96	1461.2	1470.
140	4.81	33.58	140	26.70	136.6	3.17	1461.3	1470.
150	4.52	33.60	150	26.80	127.3	3.23	1461.4	1470.
160	4.46	33.79	160	26.80	127.1	3.36	1461.5	1470.
170	4.40	33.81	170	26.83	124.8	3.40	1461.6	1470.
180	4.31	33.83	180	26.85	122.8	3.61	1461.7	1470.
190	4.15	33.82	190	26.85	122.1	3.74	1461.8	1469.
200	4.10	33.82	200	26.86	121.7	3.86	1461.9	1469.
210	4.02	33.82	210	26.87	120.5	3.98	1462.0	1469.
220	3.94	33.85	220	26.90	117.9	4.09	1462.1	1469.
230	3.92	33.89	230	26.90	114.9	4.21	1462.2	1469.
240	3.88	33.87	240	26.92	115.9	4.33	1462.3	1469.
250	3.84	33.90	250	26.95	113.1	4.44	1462.4	1469.
260	3.85	33.91	260	26.96	112.5	4.55	1462.5	1469.
270	3.79	33.93	270	26.96	110.7	4.67	1462.6	1469.
280	3.79	33.91	280	26.97	112.1	4.78	1462.7	1469.
290	3.77	33.92	290	26.98	111.1	4.89	1462.8	1469.
300	3.77	33.94	290	26.99	109.9	5.00	1462.9	1469.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8-172

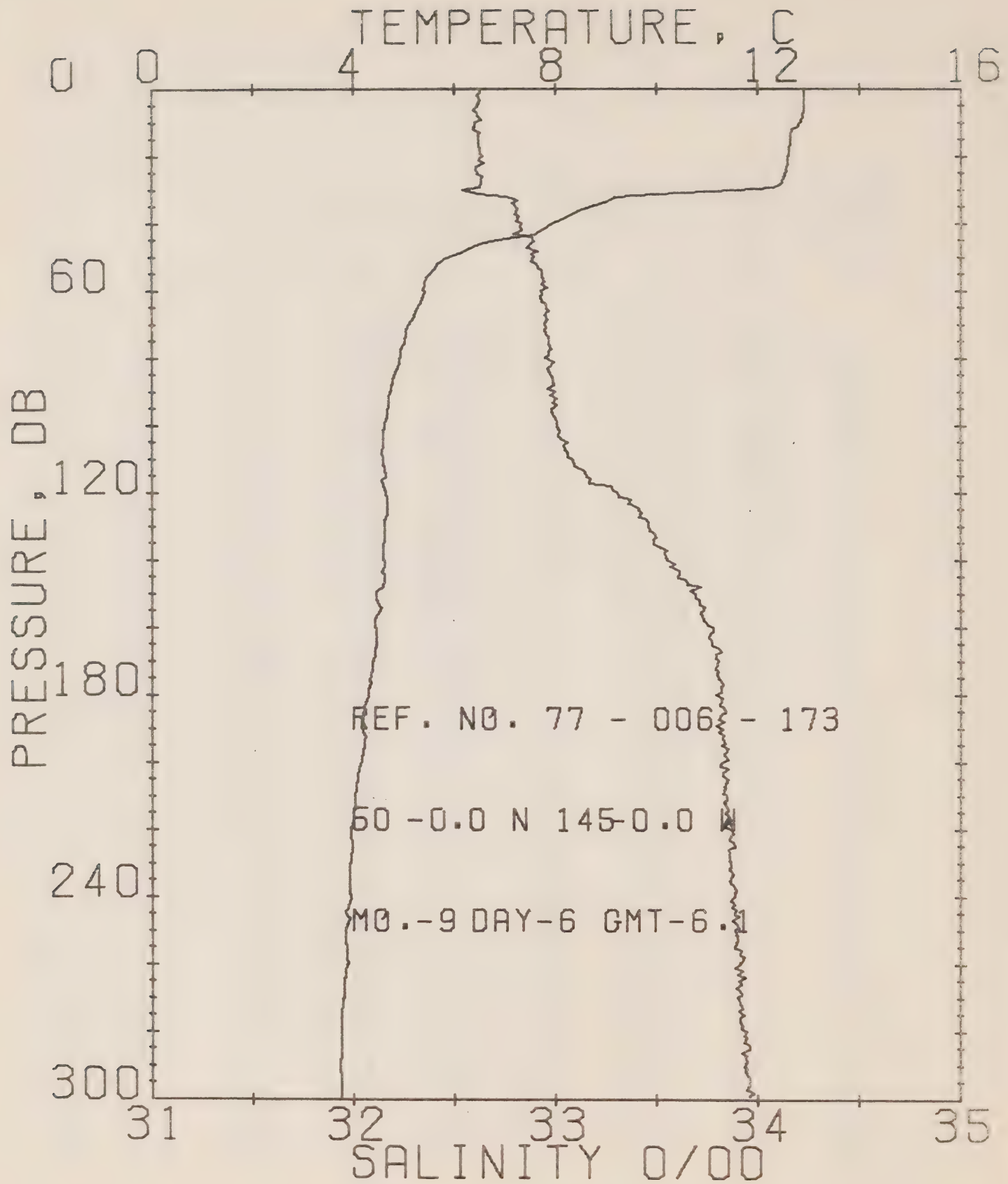
DATE 6/ 9/77

POSITION 50- 00N, 145- 00W

GMT 2.9

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.93	32.63	0	24.59	335.4	.00	.00	1498.
5	12.92	32.61	5	24.58	336.7	.17	.00	1498.
10	12.82	32.62	10	24.61	333.9	.34	.02	1497.
15	12.64	32.63	15	24.65	330.5	.50	.04	1497.
20	12.60	32.62	20	24.65	330.3	.67	.07	1497.
25	12.32	32.60	25	24.69	326.5	.83	.11	1496.
30	9.35	32.74	30	25.32	267.3	.98	.15	1486.
35	8.57	32.80	35	25.49	251.0	1.11	.19	1483.
40	7.52	32.86	40	25.71	229.3	1.23	.24	1478.
45	6.25	32.89	45	25.88	213.4	1.34	.28	1474.
50	5.74	32.92	50	25.96	205.6	1.45	.33	1472.
55	5.41	32.92	55	26.00	201.9	1.55	.39	1471.
60	5.31	32.95	60	26.04	198.5	1.65	.45	1471.
65	5.25	32.95	65	26.05	197.6	1.75	.51	1470.
70	5.07	32.95	70	26.06	196.1	1.85	.56	1470.
75	4.93	32.94	75	26.08	195.1	1.94	.60	1469.
80	4.68	32.96	80	26.10	192.8	2.04	.73	1469.
90	4.74	32.98	89	26.13	190.4	2.23	.89	1469.
100	4.63	33.01	99	26.16	187.3	2.42	1.00	1468.
110	4.65	33.19	109	26.30	173.6	2.60	1.27	1469.
120	4.70	33.45	119	26.50	155.1	2.77	1.40	1470.
130	4.70	33.60	129	26.62	143.8	2.91	1.65	1470.
140	4.59	33.68	139	26.70	136.7	3.05	1.84	1470.
150	4.56	33.72	149	26.75	133.4	3.19	2.04	1470.
160	4.49	33.77	159	26.78	129.1	3.32	2.24	1470.
170	4.45	33.79	169	26.81	126.7	3.44	2.46	1470.
180	4.29	33.82	179	26.85	122.9	3.57	2.66	1469.
190	4.20	33.83	189	26.86	122.1	3.69	2.91	1469.
200	4.11	33.86	199	26.89	118.8	3.81	3.15	1469.
210	4.09	33.88	209	26.91	116.8	3.93	3.40	1469.
220	4.01	33.85	218	26.89	118.8	4.05	3.66	1469.
230	3.96	33.89	228	26.93	114.7	4.16	3.92	1469.
240	3.90	33.91	238	26.95	113.2	4.28	4.20	1469.
250	3.86	33.87	248	26.93	115.5	4.39	4.48	1469.
260	3.82	33.92	258	26.97	111.9	4.51	4.70	1469.
270	3.79	33.92	268	26.97	111.7	4.62	5.09	1469.
280	3.76	33.90	276	26.95	113.1	4.73	5.40	1469.
290	3.75	33.94	288	26.99	109.7	4.84	5.72	1469.





## OFFSHORE OCEANOGRAPHY GROUP

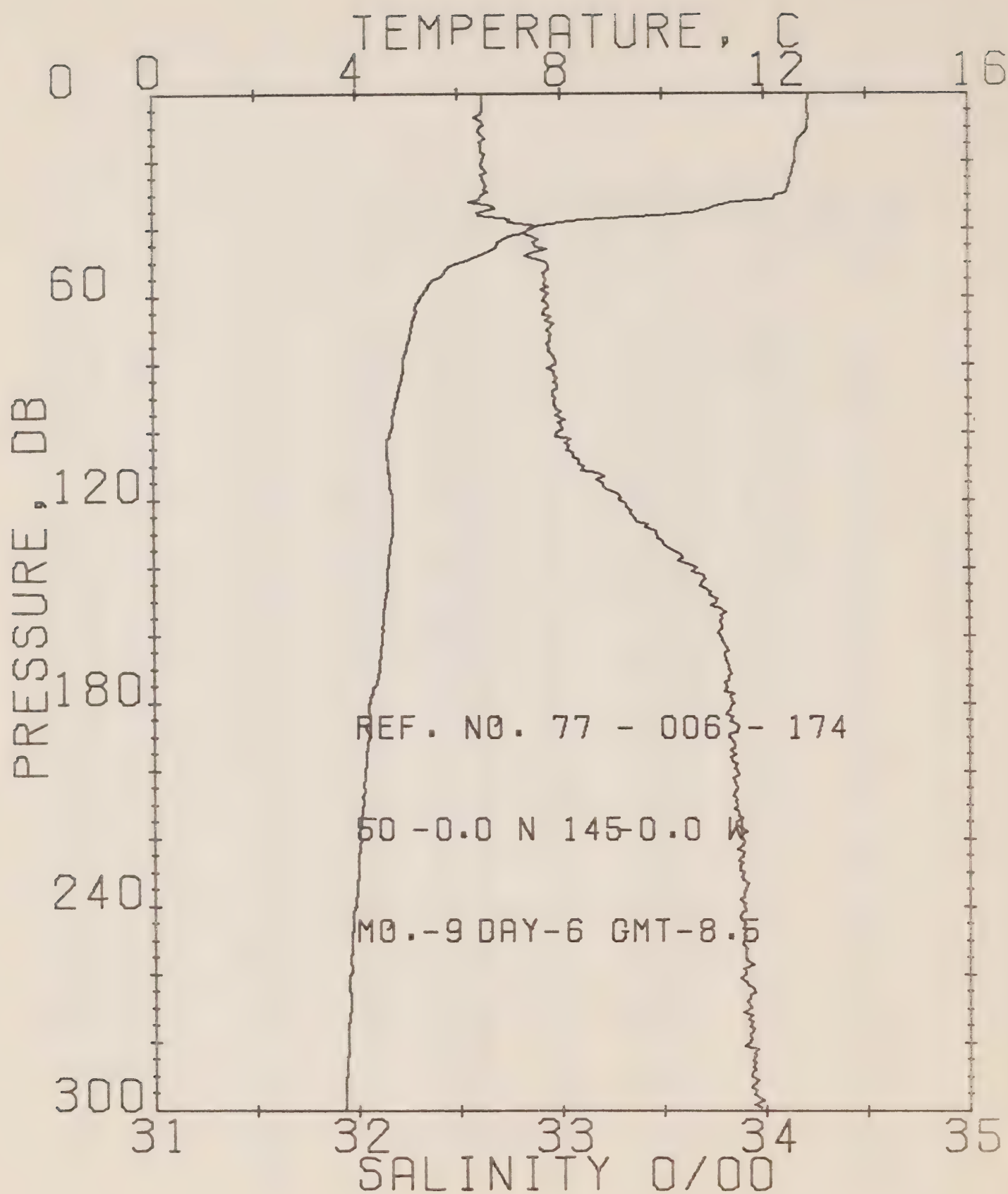
REFERENCE NO. 77- 8-173

DATE 6/ 9/77

POSITION 50- .0N, 145- .0W

GMT 6.1

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.89	32.83	0	24.80	334.7	.00	.00	1498.
5	12.90	32.81	5	24.59	336.0	.17	.00	1498.
10	12.82	32.80	10	24.60	335.3	.34	.02	1497.
15	12.63	32.82	15	24.65	330.6	.50	.04	1497.
20	12.59	32.84	20	24.67	329.0	.67	.07	1497.
25	12.54	32.81	25	24.66	329.8	.83	.11	1497.
30	11.62	32.54	30	24.78	318.6	.99	.15	1494.
35	8.06	32.81	35	25.48	251.8	1.13	.20	1483.
40	7.93	32.83	40	25.61	239.7	1.25	.24	1480.
45	6.72	32.89	45	25.82	219.1	1.37	.29	1476.
50	5.84	32.89	50	25.93	208.7	1.48	.35	1472.
55	5.52	32.93	55	26.00	201.9	1.58	.40	1471.
60	5.40	32.93	60	26.02	200.7	1.68	.46	1471.
65	5.25	32.96	65	26.05	197.2	1.78	.52	1470.
70	5.10	32.95	70	26.06	196.3	1.88	.59	1470.
75	5.00	32.96	75	26.09	194.1	1.98	.65	1470.
80	4.92	32.95	80	26.09	194.3	2.07	.74	1469.
90	4.71	33.00	89	26.15	188.4	2.26	.90	1469.
100	4.61	33.01	99	26.16	186.8	2.45	1.09	1468.
110	4.58	33.08	109	26.22	181.2	2.64	1.28	1469.
120	4.64	33.30	119	26.40	165.1	2.81	1.49	1469.
130	4.62	33.46	129	26.52	153.4	2.97	1.69	1470.
140	4.60	33.56	139	26.60	146.0	3.12	1.90	1470.
150	4.45	33.69	149	26.72	134.4	3.26	2.10	1469.
160	4.45	33.78	159	26.79	128.3	3.39	2.31	1470.
170	4.38	33.81	169	26.82	125.0	3.52	2.53	1470.
180	4.28	33.79	179	26.82	125.2	3.64	2.75	1469.
190	4.17	33.82	189	26.85	122.4	3.77	2.98	1469.
200	4.14	33.83	199	26.86	121.3	3.89	3.22	1469.
210	4.03	33.84	209	26.89	119.1	4.01	3.47	1469.
220	3.94	33.86	218	26.91	117.1	4.13	3.73	1469.
230	3.92	33.87	223	26.92	116.3	4.24	4.00	1469.
240	3.94	33.89	233	26.93	115.2	4.36	4.26	1469.
250	3.84	33.89	248	26.94	114.2	4.47	4.56	1469.
260	3.87	33.91	258	26.96	112.6	4.59	4.86	1469.
270	3.79	33.90	268	26.95	113.1	4.70	5.16	1469.
280	3.76	33.95	278	26.99	109.5	4.81	5.47	1469.
290	3.75	33.94	288	26.99	109.9	4.92	5.79	1469.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6-174

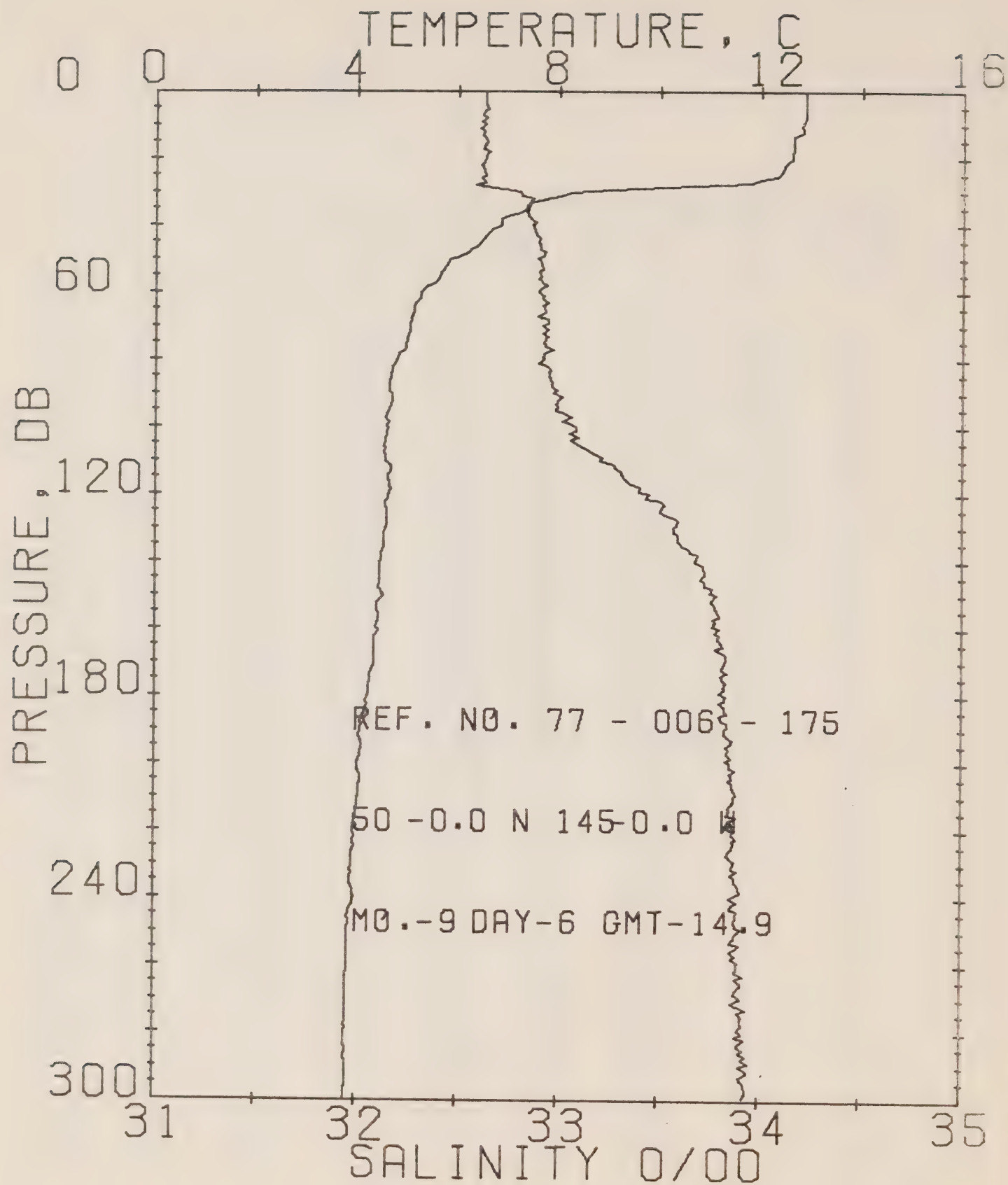
DATE 6/ 9/77

POSITION 50- .00N, 145- .00W

GMI 8.5

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.87	32.62	0	24.60	335.0	.00	.00	1497.
5	12.86	32.62	5	24.60	335.0	.17	.00	1498.
10	12.85	32.61	10	24.60	335.3	.34	.02	1498.
15	12.84	32.61	15	24.64	331.5	.50	.04	1497.
20	12.61	32.62	20	24.65	330.3	.67	.07	1497.
25	12.52	32.62	25	24.66	329.2	.83	.11	1497.
30	12.26	32.62	30	24.71	324.5	1.00	.15	1496.
35	10.59	32.60	35	25.00	297.1	1.15	.20	1490.
40	7.38	32.86	40	25.70	230.2	1.28	.25	1478.
45	6.75	32.88	45	25.81	220.6	1.39	.30	1476.
50	5.99	32.92	50	25.94	207.9	1.50	.35	1473.
55	5.52	32.93	55	26.00	202.3	1.60	.41	1471.
60	5.25	32.93	60	26.03	199.4	1.70	.47	1470.
65	5.14	32.91	65	26.03	199.4	1.80	.50	1470.
70	5.08	32.93	70	26.06	197.0	1.90	.56	1470.
75	4.99	32.95	75	26.07	195.2	2.00	.57	1469.
80	4.91	32.98	80	26.11	192.2	2.09	.75	1469.
90	4.76	32.97	89	26.12	191.0	2.29	.91	1469.
100	4.64	32.99	99	26.14	188.9	2.48	1.10	1468.
110	4.61	33.11	109	26.25	179.1	2.66	1.29	1469.
120	4.69	33.29	119	26.36	166.9	2.83	1.49	1469.
130	4.70	33.47	129	26.52	153.5	2.99	1.70	1470.
140	4.80	33.66	139	26.69	137.8	3.14	1.90	1470.
150	4.54	33.76	149	26.77	130.3	3.27	2.10	1470.
160	4.49	33.78	159	26.79	128.5	3.40	2.30	1470.
170	4.42	33.82	169	26.83	124.5	3.53	2.52	1470.
180	4.22	33.84	179	26.87	120.7	3.65	2.74	1469.
190	4.21	33.82	189	26.85	122.7	3.77	2.96	1469.
200	4.13	33.86	199	26.89	119.1	3.89	3.20	1469.
210	4.08	33.86	209	26.89	118.8	4.01	3.45	1469.
220	4.04	33.88	218	26.92	116.3	4.13	3.71	1469.
230	3.99	33.89	228	26.93	115.4	4.25	3.98	1469.
240	3.92	33.89	238	26.94	114.6	4.36	4.25	1469.
250	3.86	33.89	248	26.94	114.1	4.48	4.54	1469.
260	3.82	33.90	258	26.95	113.4	4.59	4.83	1469.
270	3.83	33.93	268	26.97	111.4	4.70	5.14	1469.
280	3.78	33.92	278	26.97	111.6	4.81	5.45	1469.
290	3.74	33.93	288	26.96	110.5	4.92	5.77	1469.





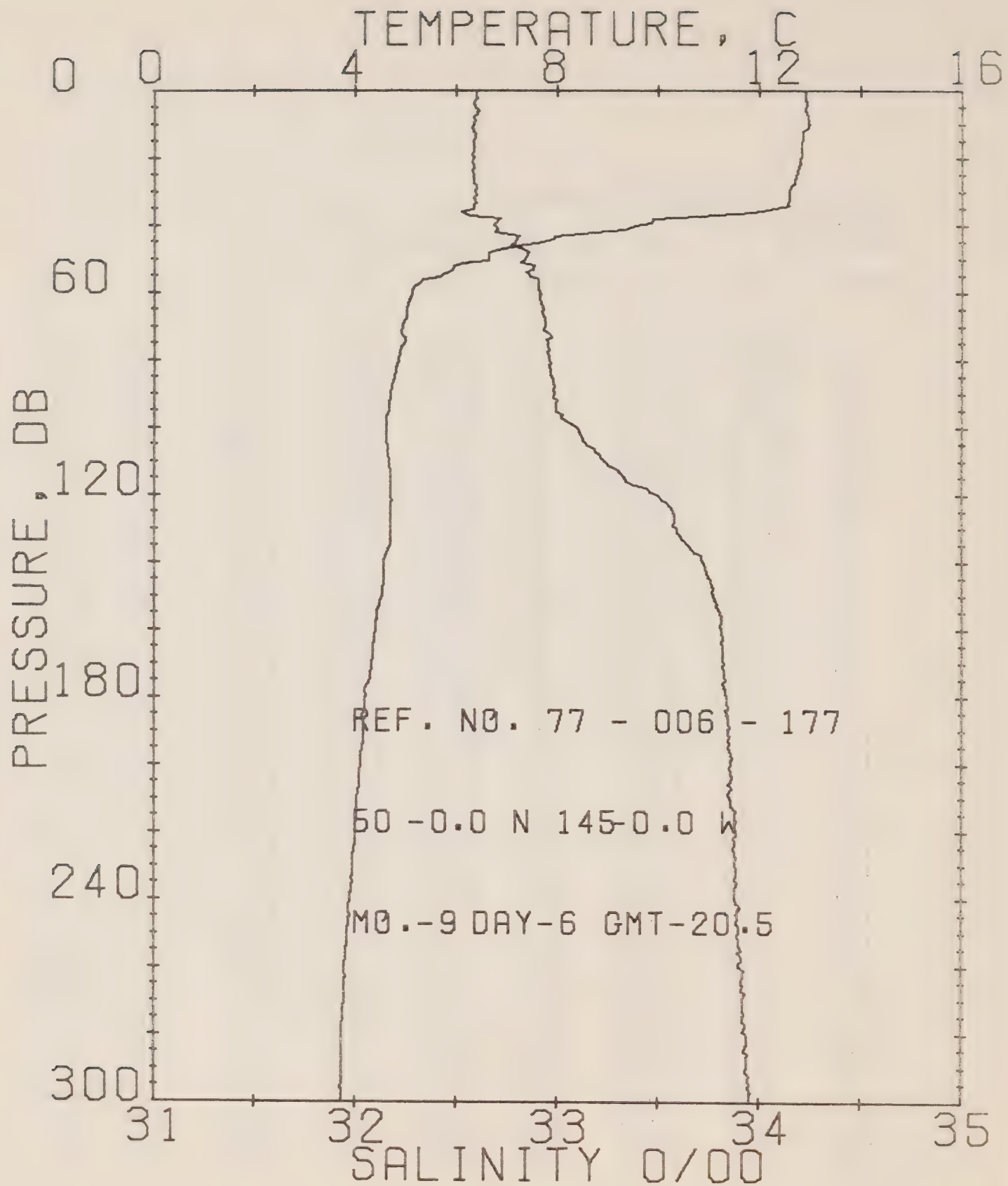
## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8-175

DATE 6/ 9/77

POSITION 50- .0N, 145- .0W GMI 14.9

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.87	32.83	0	24.61	333.8	.00	.00	1497.
5	12.87	32.84	5	24.62	333.2	.17	.00	1498.
10	12.81	32.83	10	24.62	333.0	.33	.02	1497.
15	12.83	32.84	15	24.66	329.4	.50	.04	1497.
20	12.81	32.83	20	24.66	329.5	.66	.07	1497.
25	12.82	32.83	25	24.71	324.4	.83	.11	1496.
30	8.29	32.80	30	25.53	246.5	.98	.15	1482.
35	7.85	32.85	35	25.76	230.3	1.09	.19	1478.
40	6.82	32.87	40	25.79	222.3	1.21	.25	1476.
45	6.44	32.90	45	25.86	215.2	1.32	.28	1475.
50	5.84	32.89	50	25.93	208.6	1.42	.35	1472.
55	5.82	32.91	55	25.97	204.7	1.53	.38	1472.
60	5.26	32.90	60	26.01	201.3	1.63	.44	1470.
65	5.11	32.93	65	26.05	197.5	1.73	.50	1470.
70	5.05	32.92	70	26.05	197.5	1.82	.57	1470.
75	4.97	32.93	75	26.06	196.5	1.92	.65	1469.
80	4.77	32.92	80	26.08	194.6	2.02	.72	1469.
90	4.69	32.97	89	26.13	190.3	2.21	.89	1469.
100	4.60	33.08	99	26.22	181.1	2.40	1.07	1468.
110	4.55	33.21	109	26.33	171.1	2.58	1.26	1469.
120	4.63	33.45	119	26.51	154.1	2.74	1.45	1469.
130	4.57	33.57	129	26.62	144.3	2.89	1.64	1469.
140	4.46	33.68	139	26.71	135.2	3.03	1.83	1469.
150	4.52	33.78	149	26.79	128.3	3.16	2.02	1470.
160	4.42	33.80	159	26.81	126.1	3.29	2.23	1470.
170	4.34	33.83	169	26.85	122.9	3.41	2.44	1469.
180	4.22	33.83	179	26.86	121.8	3.53	2.66	1469.
190	4.07	33.83	189	26.87	120.7	3.65	2.88	1469.
200	4.02	33.85	199	26.89	118.3	3.77	3.12	1469.
210	4.02	33.87	208	26.91	116.9	3.89	3.37	1469.
220	3.94	33.87	218	26.92	116.3	4.01	3.65	1469.
230	3.91	33.87	228	26.92	115.8	4.13	3.89	1469.
240	3.96	33.85	238	26.90	118.0	4.24	4.17	1469.
250	3.85	33.90	248	26.95	113.3	4.36	4.46	1469.
260	3.83	33.89	258	26.95	113.7	4.47	4.75	1469.
270	3.82	33.91	268	26.96	112.6	4.58	5.06	1469.
280	3.80	33.91	278	26.97	112.0	4.70	5.38	1469.
290	3.80	33.92	288	26.97	112.1	4.81	5.70	1469.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6-177

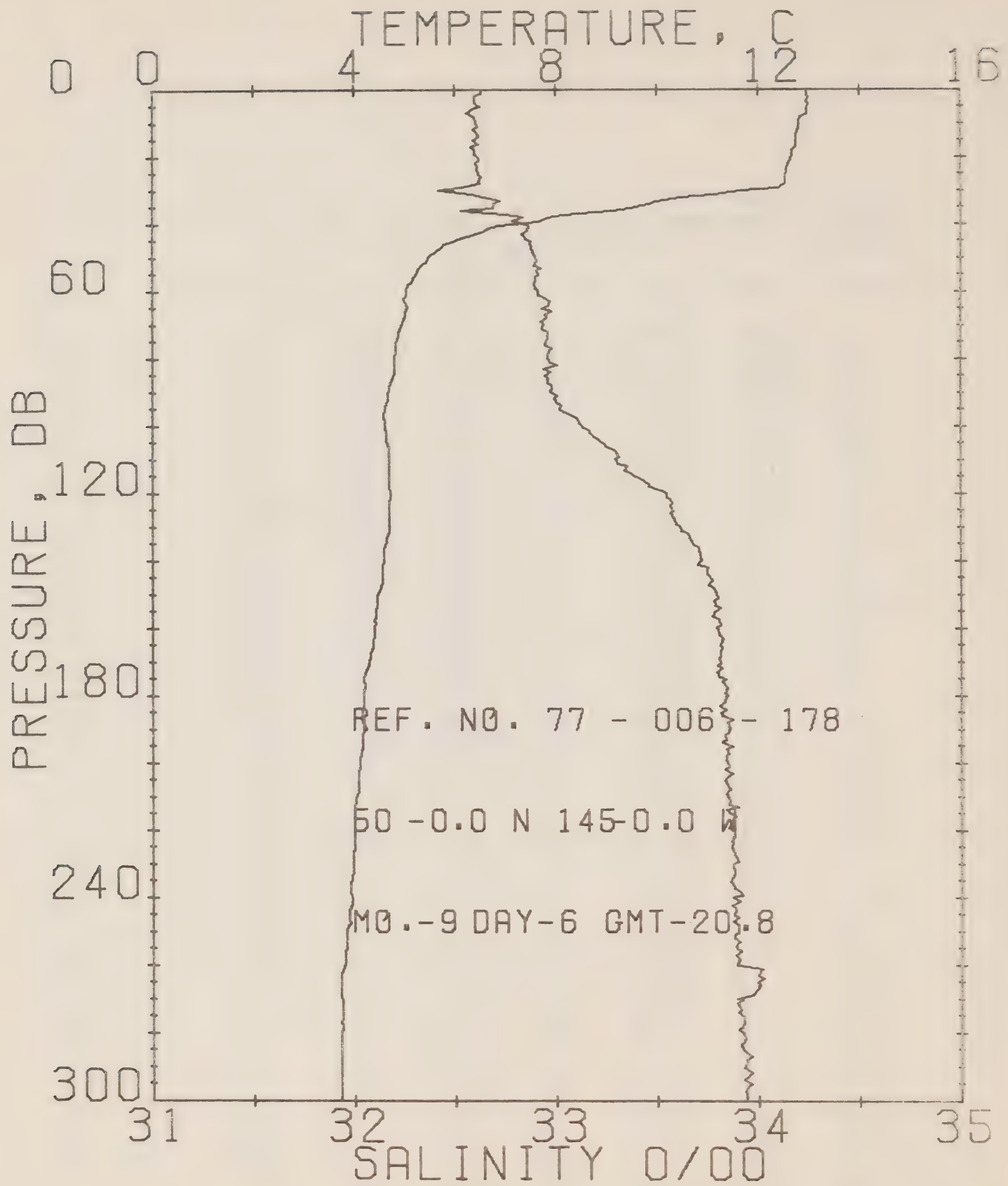
DATE 6/ 9/77

POSITION 50- .0N, 145- .0W

GMT 20.5

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.91	32.80	0	24.58	336.9	.00	.00	1498.
5	12.92	32.80	5	24.57	337.4	.17	.00	1498.
10	12.98	32.59	10	24.55	339.6	.34	.02	1498.
15	12.84	32.59	15	24.58	336.8	.51	.04	1498.
20	12.80	32.58	20	24.58	336.7	.67	.07	1498.
25	12.72	32.58	25	24.60	335.3	.84	.11	1497.
30	12.59	32.60	30	24.63	332.1	1.01	.15	1497.
35	12.20	32.59	35	24.70	325.8	1.18	.21	1496.
40	9.56	32.88	40	25.24	274.4	1.32	.27	1488.
45	7.63	32.80	45	25.62	238.2	1.45	.32	1479.
50	6.83	32.84	50	25.79	221.9	1.56	.38	1476.
55	5.89	32.88	55	25.93	209.1	1.67	.43	1472.
60	5.12	32.91	60	26.03	198.9	1.77	.49	1470.
65	5.01	32.93	65	26.06	196.6	1.87	.55	1469.
70	4.94	32.94	70	26.07	195.2	1.97	.62	1469.
75	4.96	32.95	75	26.08	194.7	2.07	.69	1469.
80	4.85	32.96	80	26.10	193.0	2.16	.77	1469.
90	4.69	32.98	89	26.14	189.4	2.35	.94	1469.
100	4.61	33.10	99	26.24	180.0	2.54	1.12	1468.
110	4.67	33.23	109	26.34	170.8	2.72	1.30	1469.
120	4.70	33.49	119	26.54	151.7	2.88	1.49	1470.
130	4.69	33.59	129	26.62	144.4	3.03	1.65	1470.
140	4.57	33.72	139	26.73	133.5	3.17	1.87	1470.
150	4.52	33.78	149	26.78	128.8	3.30	2.07	1470.
160	4.59	33.81	159	26.82	124.9	3.42	2.27	1470.
170	4.53	33.82	169	26.84	123.3	3.55	2.47	1469.
180	4.19	33.84	179	26.87	121.1	3.67	2.69	1469.
190	4.16	33.85	189	26.88	119.9	3.79	2.92	1469.
200	4.10	33.86	199	26.89	118.6	3.91	3.16	1469.
210	4.03	33.86	209	26.90	118.0	4.03	3.40	1469.
220	3.99	33.89	218	26.92	115.6	4.14	3.66	1469.
230	3.95	33.88	228	26.92	115.9	4.26	3.93	1469.
240	3.89	33.88	238	26.95	115.1	4.37	4.20	1469.
250	3.84	33.90	248	26.95	113.4	4.49	4.49	1469.
260	3.80	33.90	258	26.96	112.9	4.60	4.76	1469.
270	3.79	33.92	268	26.97	111.7	4.71	5.06	1469.
280	3.73	33.93	276	26.99	110.0	4.82	5.39	1469.
290	3.73	33.94	286	26.99	109.5	4.93	5.71	1469.
300	3.73	33.95	296	27.00	108.6	5.04	6.04	1469.





## OFFSHORE OCEANOGRAPHY GROUP

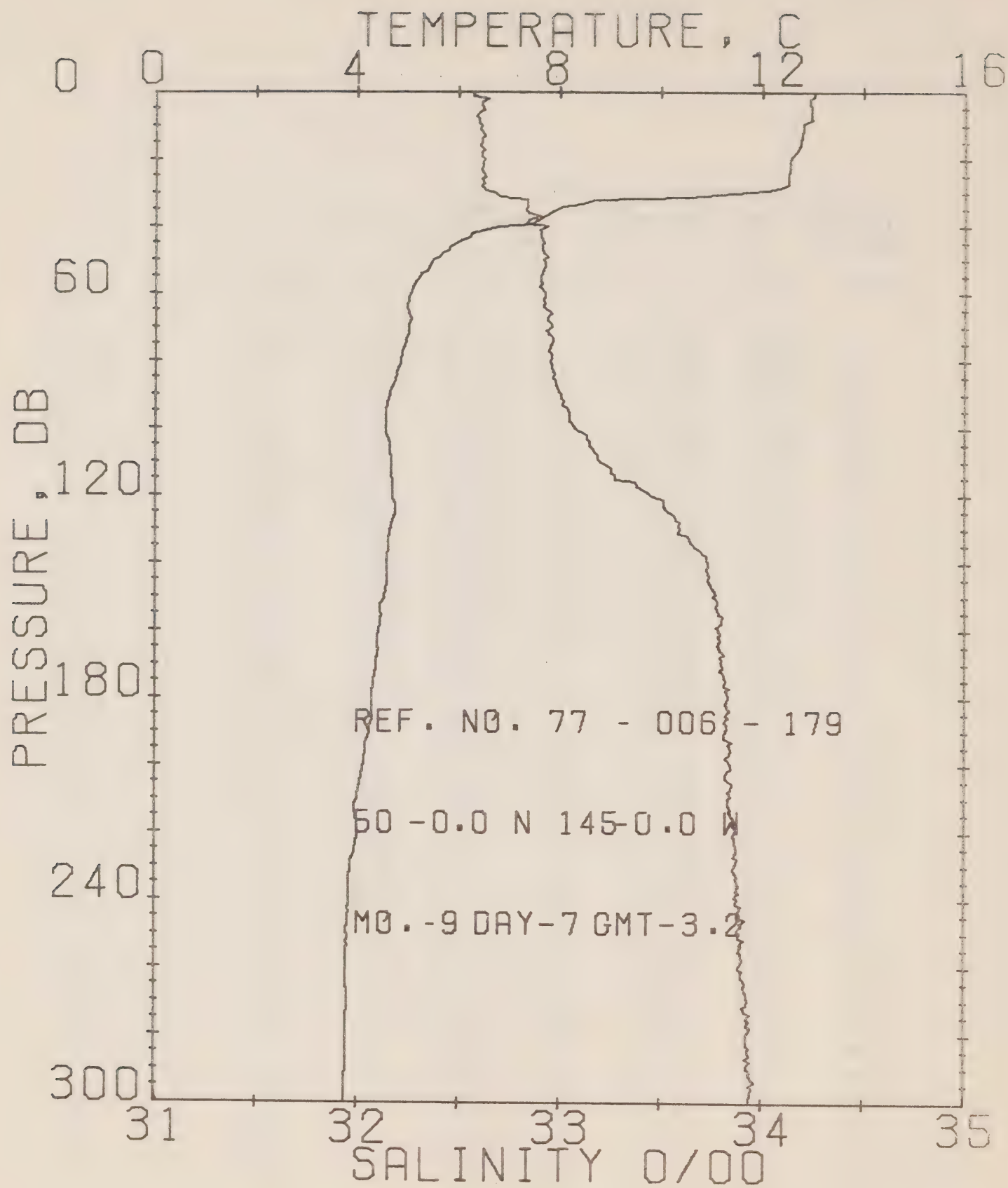
REFERENCE NO. 17- 8-178

DATE 6/ 9/77

POSITION 50- .0N, 145- .0W

GMT 20.8

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.95	32.63	0	24.59	335.5	.00	.00	1496.
5	12.96	32.62	5	24.59	336.3	.17	.00	1496.
10	12.80	32.61	10	24.60	334.6	.34	.02	1497.
15	12.75	32.60	15	24.61	334.6	.50	.04	1497.
20	12.65	32.62	20	24.64	331.3	.67	.07	1497.
25	12.54	32.62	25	24.66	329.5	.84	.11	1497.
30	11.75	32.44	30	24.67	328.8	1.00	.15	1494.
35	9.52	32.69	35	25.25	273.3	1.15	.20	1486.
40	7.63	32.85	40	25.75	226.2	1.27	.25	1477.
45	5.97	32.87	45	25.90	211.4	1.38	.30	1473.
50	5.47	32.90	50	25.98	203.8	1.49	.35	1471.
55	5.22	32.91	55	26.02	200.1	1.59	.40	1470.
60	5.04	32.91	60	26.04	198.2	1.69	.40	1469.
65	5.05	32.93	65	26.06	196.7	1.78	.52	1470.
70	4.92	32.94	70	26.08	194.9	1.88	.59	1469.
75	4.84	32.96	75	26.10	192.9	1.98	.60	1469.
80	4.80	32.96	80	26.10	192.4	2.08	.74	1469.
90	4.68	32.97	89	26.13	189.9	2.27	.90	1463.
100	4.62	33.13	99	26.26	178.0	2.45	1.05	1469.
110	4.69	33.29	109	26.38	166.3	2.62	1.20	1469.
120	4.71	33.54	119	26.56	147.9	2.78	1.40	1470.
130	4.69	33.61	129	26.65	142.7	2.93	1.60	1470.
140	4.58	33.72	139	26.75	133.4	3.06	1.82	1475.
150	4.47	33.79	149	26.80	127.2	3.19	2.01	1476.
160	4.40	33.79	159	26.81	126.3	3.32	2.21	1470.
170	4.29	33.61	169	26.84	123.6	3.44	2.42	1469.
180	4.19	33.84	179	26.87	120.6	3.57	2.64	1469.
190	4.18	33.86	189	26.88	119.4	3.69	2.87	1469.
200	4.12	33.85	199	26.88	119.8	3.81	3.11	1469.
210	4.03	33.85	208	26.89	119.0	3.93	3.35	1469.
220	3.99	33.88	218	26.92	116.4	4.04	3.61	1469.
230	3.97	33.87	228	26.92	116.5	4.16	3.85	1469.
240	3.94	33.88	238	26.95	115.5	4.28	4.10	1469.
250	3.84	33.90	248	26.95	113.4	4.39	4.44	1469.
260	3.79	33.89	258	26.95	113.5	4.50	4.74	1469.
270	3.76	33.90	268	26.96	112.9	4.61	5.03	1469.
280	3.74	33.92	278	26.96	111.1	4.72	5.35	1469.
290	3.73	33.93	288	26.99	110.2	4.83	5.66	1469.
300	3.73	33.94	298	26.99	109.8	4.94	5.99	1469.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 17- 6-179

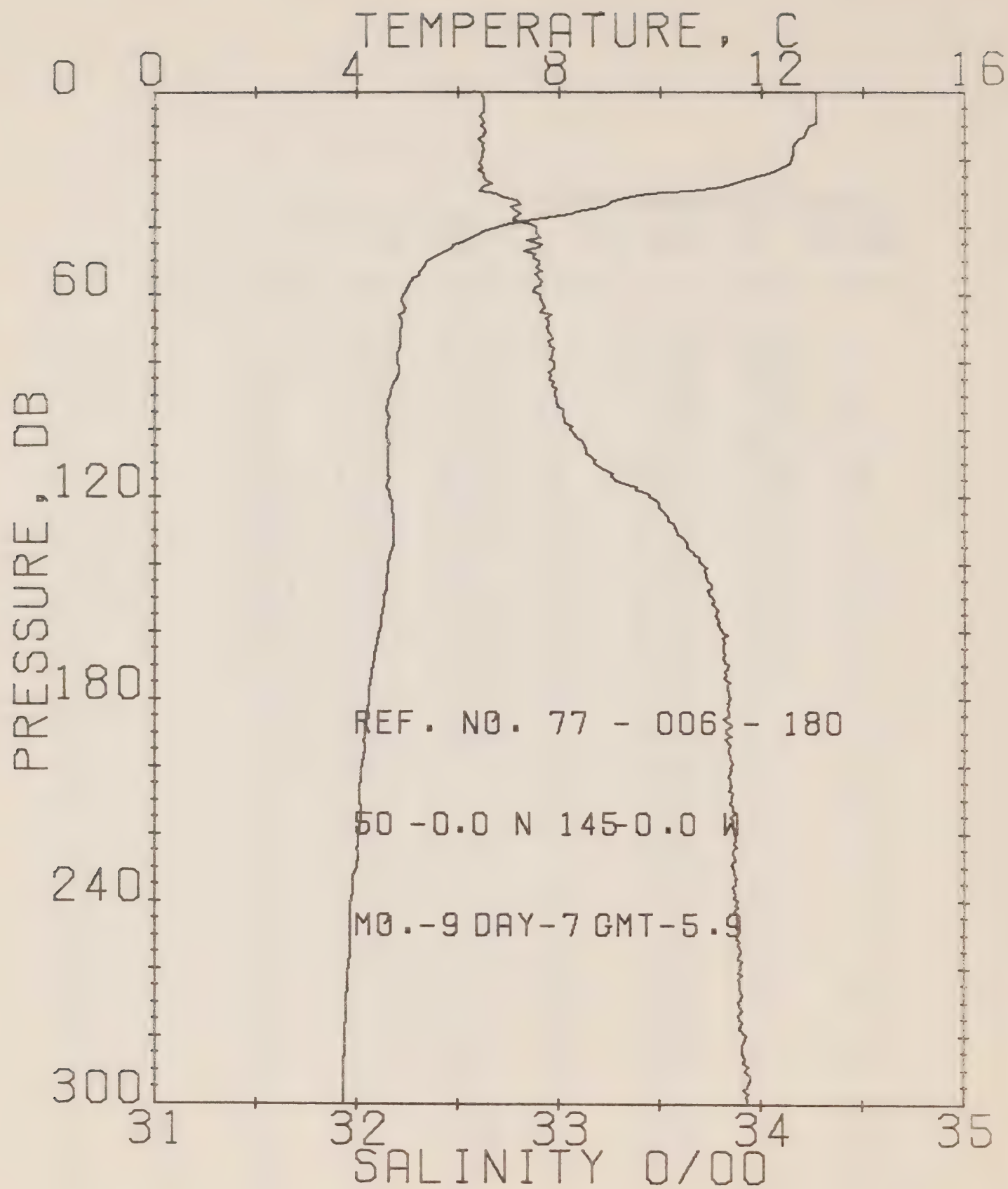
DATE 7/ 9/77

POSITION 50- .0N, 145- .0W

GMT 3.2

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	13.00	32.57	0	24.54	340.8	.00	.00	1498.
5	12.97	32.53	5	24.59	336.2	.17	.00	1498.
10	12.80	32.51	10	24.61	334.1	.34	.02	1497.
15	12.74	32.51	15	24.62	333.2	.50	.04	1497.
20	12.55	32.53	20	24.57	328.9	.67	.07	1497.
25	12.51	32.53	25	24.68	327.8	.83	.11	1497.
30	11.47	32.58	30	24.91	305.9	1.00	.15	1493.
35	7.90	32.53	35	25.61	239.0	1.13	.19	1488.
40	6.89	32.93	40	25.83	218.7	1.24	.24	1477.
45	5.93	32.92	45	25.94	207.7	1.35	.28	1473.
50	5.49	32.92	50	26.00	202.4	1.45	.33	1471.
55	5.22	32.91	55	26.02	200.6	1.55	.39	1470.
60	5.04	32.93	60	26.05	197.3	1.65	.45	1469.
65	5.00	32.95	65	26.07	195.4	1.75	.51	1469.
70	5.01	32.96	70	26.08	194.6	1.85	.55	1469.
75	4.95	32.96	75	26.09	194.0	1.95	.60	1469.
80	4.85	32.96	80	26.10	192.9	2.04	.72	1469.
90	4.63	33.00	89	26.16	187.3	2.23	.89	1468.
100	4.55	33.07	99	26.22	181.2	2.42	1.07	1468.
110	4.67	33.20	109	26.31	173.0	2.59	1.25	1468.
120	4.70	33.45	119	26.51	154.5	2.75	1.45	1470.
130	4.65	33.59	129	26.62	143.6	2.91	1.61	1471.
140	4.59	33.74	139	26.74	132.4	3.04	1.83	1470.
150	4.53	33.76	149	26.77	129.9	3.18	2.02	1470.
160	4.42	33.79	159	26.80	127.1	3.30	2.22	1470.
170	4.37	33.80	169	26.82	125.7	3.43	2.44	1470.
180	4.29	33.84	179	26.85	122.2	3.55	2.60	1469.
190	4.23	33.82	189	26.85	122.6	3.68	2.89	1469.
200	4.12	33.84	199	26.86	120.0	3.80	3.15	1469.
210	3.99	33.83	208	26.88	119.6	3.92	3.35	1469.
220	4.00	33.85	218	26.91	117.4	4.04	3.64	1469.
230	3.86	33.87	228	26.92	115.6	4.15	3.91	1468.
240	3.84	33.88	238	26.94	114.6	4.27	4.18	1469.
250	3.80	33.89	248	26.95	113.7	4.38	4.40	1469.
260	3.79	33.89	258	26.95	113.3	4.40	4.76	1469.
270	3.81	33.93	268	26.98	110.7	4.61	5.08	1469.
280	3.78	33.93	278	26.98	111.0	4.72	5.37	1469.
290	3.78	33.93	288	26.98	110.8	4.83	5.69	1469.
300	3.76	33.93	298	27.00	109.3	4.94	6.02	1469.





## OFFSHORE OCEANOGRAPHY GROUP

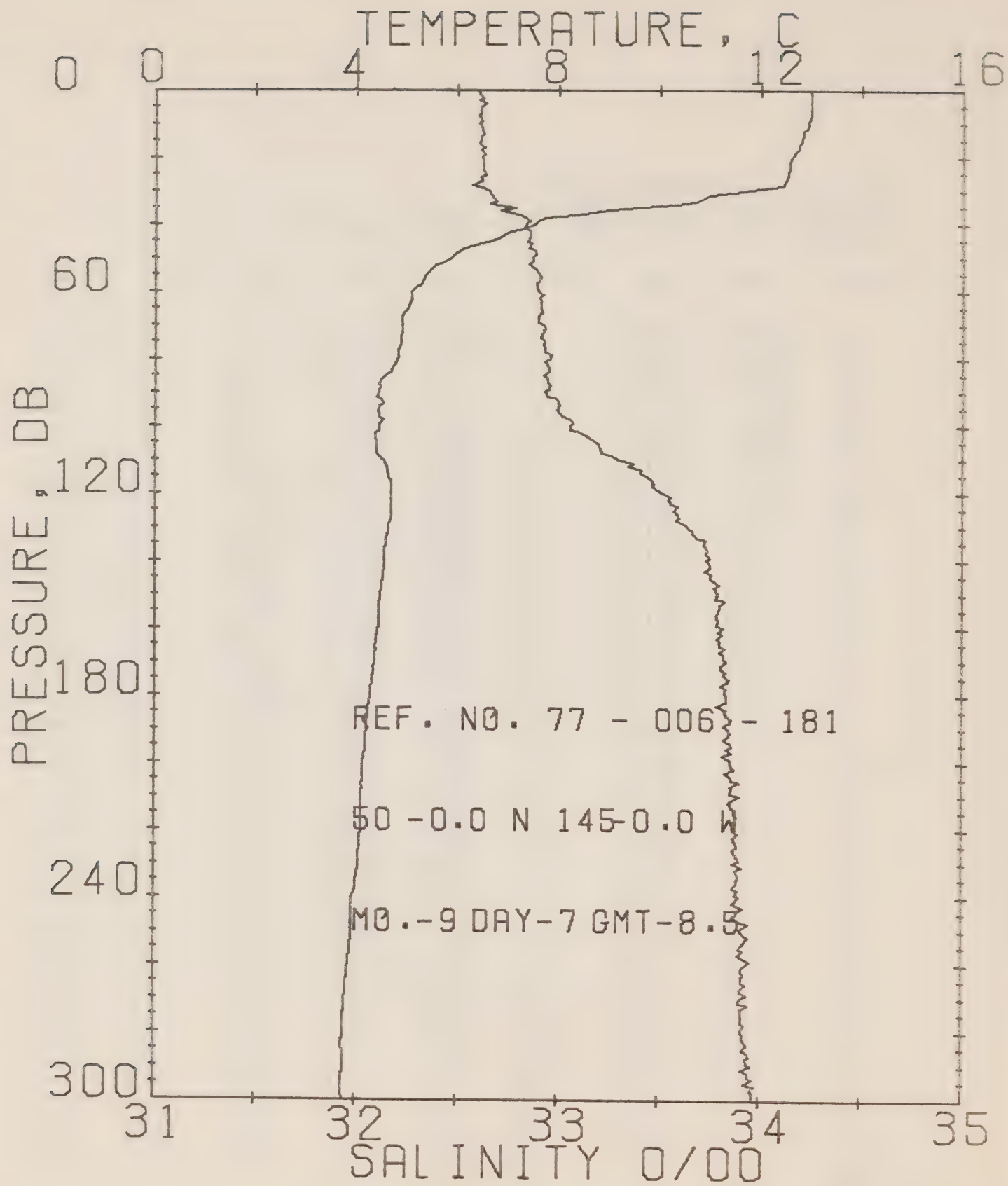
REFERENCE NO. 17- 6-180

DATE 7/ 9/77

POSITION 50- .0N, 145- .0W

GMT 5.9

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	13.07	32.62	0	24.56	338.3	.00	.00	1498.
5	13.07	32.63	5	24.56	338.3	.17	.00	1498.
10	12.93	32.61	10	24.58	336.6	.34	.02	1498.
15	12.65	32.63	15	24.65	330.6	.51	.04	1497.
20	12.58	32.61	20	24.65	330.4	.67	.07	1497.
25	11.83	32.52	25	24.80	316.1	.83	.11	1494.
30	9.85	32.67	30	25.18	279.7	.99	.15	1487.
35	8.69	32.79	35	25.50	249.3	1.12	.19	1482.
40	6.76	32.88	40	25.81	220.4	1.23	.24	1478.
45	5.93	32.90	45	25.93	209.0	1.34	.28	1473.
50	5.39	32.90	50	25.99	203.0	1.45	.33	1471.
55	5.11	32.90	55	26.02	199.9	1.55	.39	1470.
60	4.92	32.91	60	26.05	197.4	1.65	.45	1469.
65	4.90	32.91	65	26.05	197.0	1.74	.51	1469.
70	4.85	32.94	70	26.09	194.0	1.84	.57	1469.
75	4.85	32.95	75	26.09	193.5	1.94	.65	1469.
80	4.81	32.97	80	26.12	191.3	2.03	.72	1469.
90	4.64	32.98	89	26.14	189.3	2.22	.89	1468.
100	4.59	33.05	99	26.20	183.2	2.41	1.07	1468.
110	4.61	33.18	109	26.30	174.3	2.59	1.28	1469.
120	4.67	33.45	119	26.51	154.5	2.75	1.45	1470.
130	4.72	33.58	129	26.60	145.5	2.90	1.64	1470.
140	4.62	33.70	139	26.71	135.2	3.04	1.83	1470.
150	4.53	33.76	149	26.77	130.4	3.18	2.00	1470.
160	4.43	33.81	159	26.82	125.5	3.30	2.25	1470.
170	4.31	33.84	169	26.85	122.3	3.43	2.44	1469.
180	4.24	33.85	179	26.87	120.8	3.55	2.68	1469.
190	4.16	33.83	189	26.86	121.6	3.67	2.89	1469.
200	4.08	33.85	199	26.88	119.4	3.79	3.15	1469.
210	4.06	33.85	208	26.89	118.8	3.91	3.35	1469.
220	4.03	33.87	218	26.90	117.6	4.03	3.54	1469.
230	3.99	33.86	228	26.91	117.5	4.15	3.90	1469.
240	3.88	33.89	238	26.94	114.7	4.26	4.18	1469.
250	3.87	33.89	248	26.94	114.5	4.38	4.47	1469.
260	3.82	33.90	258	26.95	113.2	4.49	4.77	1469.
270	3.80	33.89	268	26.95	113.8	4.61	5.07	1469.
280	3.76	33.92	278	26.98	110.9	4.72	5.39	1469.
290	3.73	33.93	288	26.98	110.7	4.83	5.71	1469.
300	3.72	33.93	298	26.98	110.5	4.94	6.04	1469.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6-181

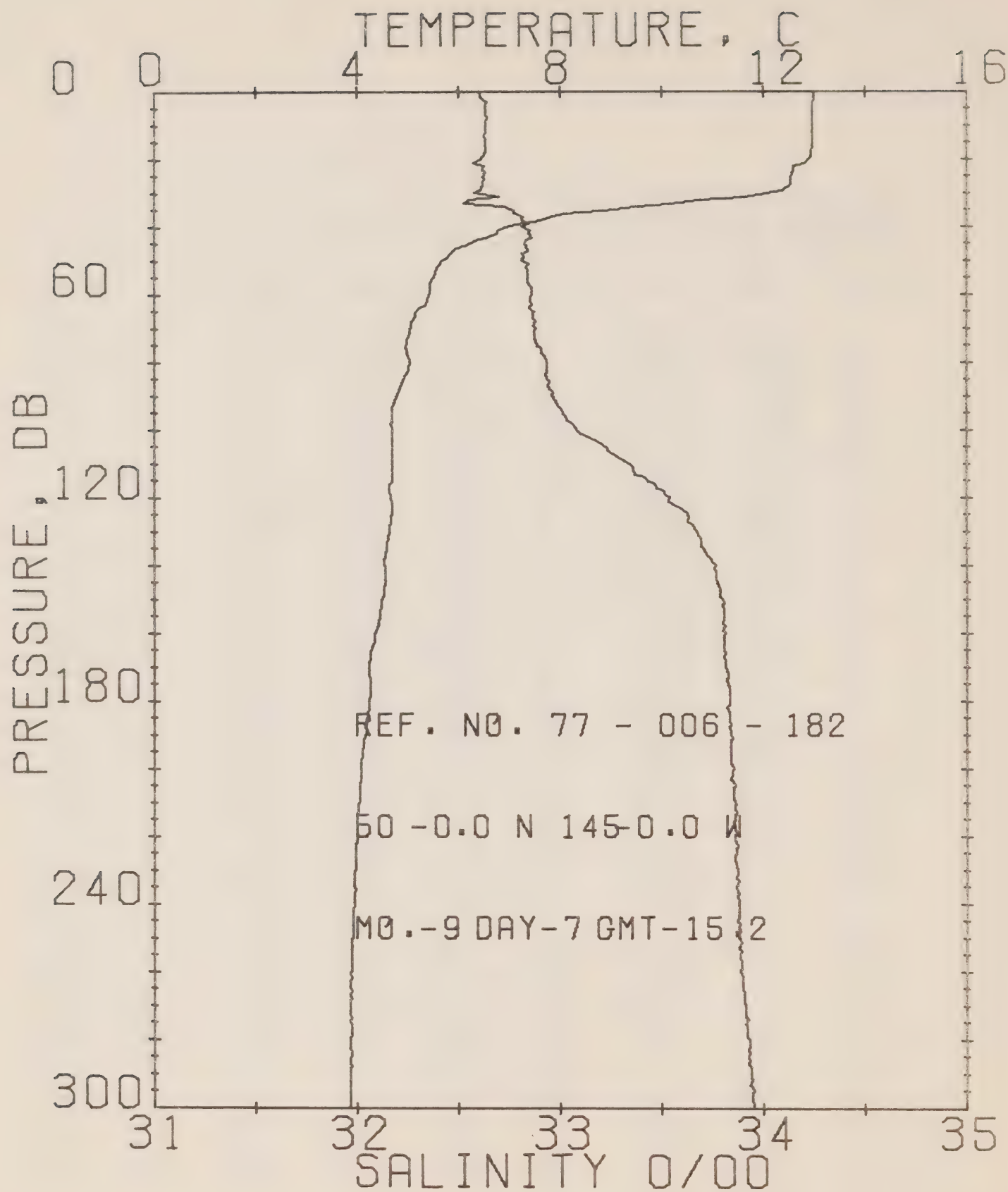
DATE 7/ 9/77

POSITION 50- .0N, 145- .0W

GMT 8.0

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. m	SOUND
0	12.99	32.61	0	24.57	337.9	.00	.00	1490.
5	12.99	32.61	5	24.57	337.5	.17	.00	1490.
10	12.93	32.61	10	24.56	337.1	.34	.00	1490.
15	12.79	32.61	15	24.61	334.2	.50	.00	1497.
20	12.59	32.62	20	24.66	329.9	.67	.00	1497.
25	12.53	32.64	25	24.68	327.5	.84	.01	1497.
30	11.69	32.65	30	24.85	311.8	1.00	.10	1494.
35	9.47	32.76	35	25.32	267.3	1.14	.20	1486.
40	7.52	32.84	40	25.67	233.2	1.27	.25	1479.
45	6.63	32.85	45	25.80	221.1	1.38	.30	1475.
50	5.87	32.87	50	25.91	210.3	1.49	.35	1473.
55	5.57	32.91	55	26.00	202.3	1.59	.40	1471.
60	5.10	32.90	60	26.03	199.7	1.69	.45	1470.
65	5.00	32.91	65	26.05	197.9	1.79	.50	1469.
70	4.69	32.93	70	26.07	195.7	1.89	.55	1469.
75	4.68	32.93	75	26.07	195.2	1.99	.60	1469.
80	4.61	32.96	80	26.10	192.7	2.08	.74	1469.
90	4.46	32.93	89	26.12	190.9	2.28	.93	1467.
100	4.45	33.06	99	26.22	181.0	2.46	1.09	1468.
110	4.52	33.29	109	26.40	164.6	2.63	1.27	1469.
120	4.69	33.51	119	26.55	150.2	2.79	1.42	1470.
130	4.65	33.64	129	26.66	140.1	2.93	1.60	1470.
140	4.55	33.73	139	26.74	132.3	3.07	1.82	1470.
150	4.49	33.79	149	26.80	127.3	3.20	2.00	1470.
160	4.44	33.82	159	26.82	125.1	3.33	2.22	1470.
170	4.37	33.83	169	26.84	123.0	3.45	2.40	1470.
180	4.29	33.84	179	26.85	122.2	3.57	2.60	1469.
190	4.20	33.84	189	26.87	121.1	3.70	2.80	1469.
200	4.14	33.85	199	26.88	119.5	3.82	3.10	1469.
210	4.12	33.90	209	26.92	116.0	3.94	3.40	1469.
220	4.10	33.87	218	26.96	118.1	4.05	3.70	1469.
230	4.05	33.87	228	26.90	117.6	4.17	3.80	1469.
240	3.93	33.90	238	26.94	114.4	4.29	3.90	1469.
250	3.92	33.91	248	26.95	113.6	4.40	4.00	1469.
260	3.85	33.93	258	26.97	111.1	4.51	4.70	1469.
270	3.78	33.91	268	26.97	112.0	4.62	5.00	1469.
280	3.75	33.91	278	26.97	111.8	4.74	5.30	1469.
290	3.75	33.95	288	27.00	108.6	4.85	5.60	1469.
300	3.74	33.97	298	27.02	107.4	4.95	5.80	1469.





## OFFSHORE OCEANOGRAPHY GROUP

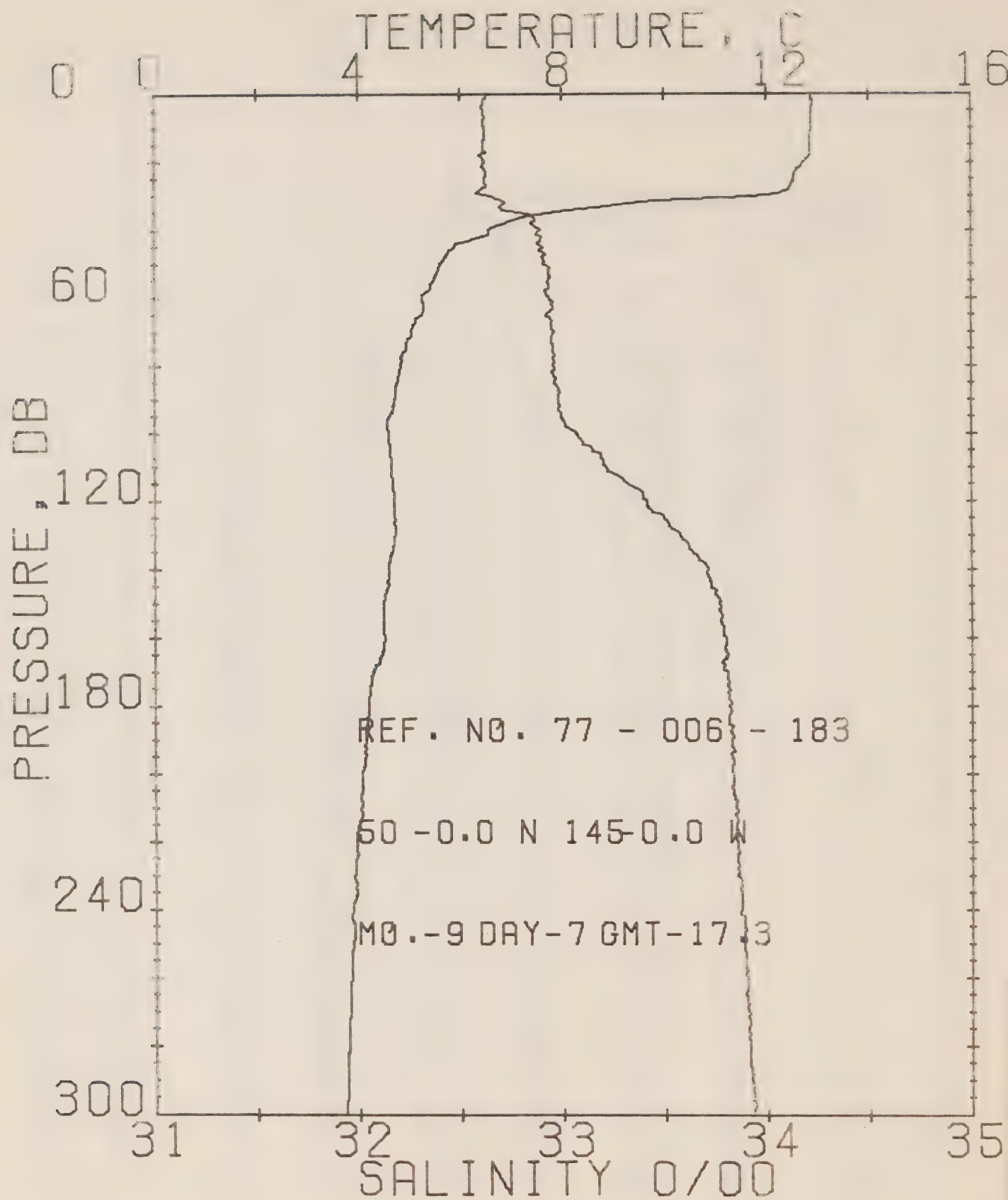
REFERENCE NO. 77- 6-182

DATE 7/ 9/77

POSITION 50- .0N, 145- .0W

GMT 15.2

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.99	32.61	0	24.57	338.0	.00	.00	1498.
5	12.96	32.63	5	24.59	335.7	.17	.00	1498.
10	12.96	32.63	10	24.59	335.7	.34	.02	1498.
15	12.96	32.63	15	24.59	336.0	.50	.04	1498.
20	12.89	32.61	20	24.59	336.3	.67	.07	1498.
25	12.55	32.62	25	24.66	329.2	.84	.11	1497.
30	12.07	32.58	30	24.72	324.0	1.00	.15	1495.
35	8.68	32.77	35	25.41	257.9	1.15	.20	1484.
40	6.91	32.62	40	25.74	227.2	1.27	.25	1476.
45	6.20	32.63	45	25.84	217.6	1.38	.29	1474.
50	5.69	32.62	50	25.89	212.5	1.49	.35	1472.
55	5.50	32.64	55	25.93	208.5	1.59	.40	1471.
60	5.43	32.66	60	25.96	206.2	1.69	.46	1471.
65	5.15	32.67	65	26.00	202.5	1.80	.55	1470.
70	5.05	32.68	70	26.01	201.0	1.90	.60	1470.
75	4.96	32.69	75	26.03	199.6	2.00	.67	1469.
80	5.04	32.93	80	26.06	196.9	2.10	.75	1470.
90	4.77	32.96	89	26.11	191.9	2.29	.92	1469.
100	4.68	33.09	99	26.22	181.8	2.48	1.10	1469.
110	4.69	33.54	109	26.42	162.9	2.65	1.26	1469.
120	4.68	33.54	119	26.56	148.1	2.81	1.47	1470.
130	4.64	33.67	129	26.69	137.5	2.95	1.65	1470.
140	4.57	33.76	139	26.77	130.1	3.08	1.85	1470.
150	4.49	33.80	149	26.80	126.7	3.21	2.02	1470.
160	4.35	33.61	159	26.83	124.6	3.34	2.22	1469.
170	4.25	33.61	169	26.84	123.4	3.46	2.40	1469.
180	4.25	33.83	179	26.85	122.1	3.59	2.65	1469.
190	4.16	33.84	189	26.87	120.6	3.71	2.85	1469.
200	4.07	33.65	199	26.89	118.9	3.83	3.12	1469.
210	4.03	33.85	209	26.90	117.7	3.95	3.37	1469.
220	3.99	33.66	218	26.91	117.4	4.06	3.62	1469.
230	3.96	33.87	226	26.92	116.5	4.18	3.89	1469.
240	3.94	33.68	238	26.92	115.9	4.30	4.17	1469.
250	3.91	33.68	248	26.93	115.4	4.41	4.46	1469.
260	3.88	33.89	258	26.94	114.6	4.53	4.76	1469.
270	3.88	33.91	268	26.96	112.7	4.64	5.00	1469.
280	3.87	33.93	278	26.97	111.6	4.75	5.36	1469.
290	3.88	33.94	288	26.98	111.2	4.87	5.70	1470.
300	3.86	33.95	298	26.99	110.2	4.98	6.04	1470.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6-183

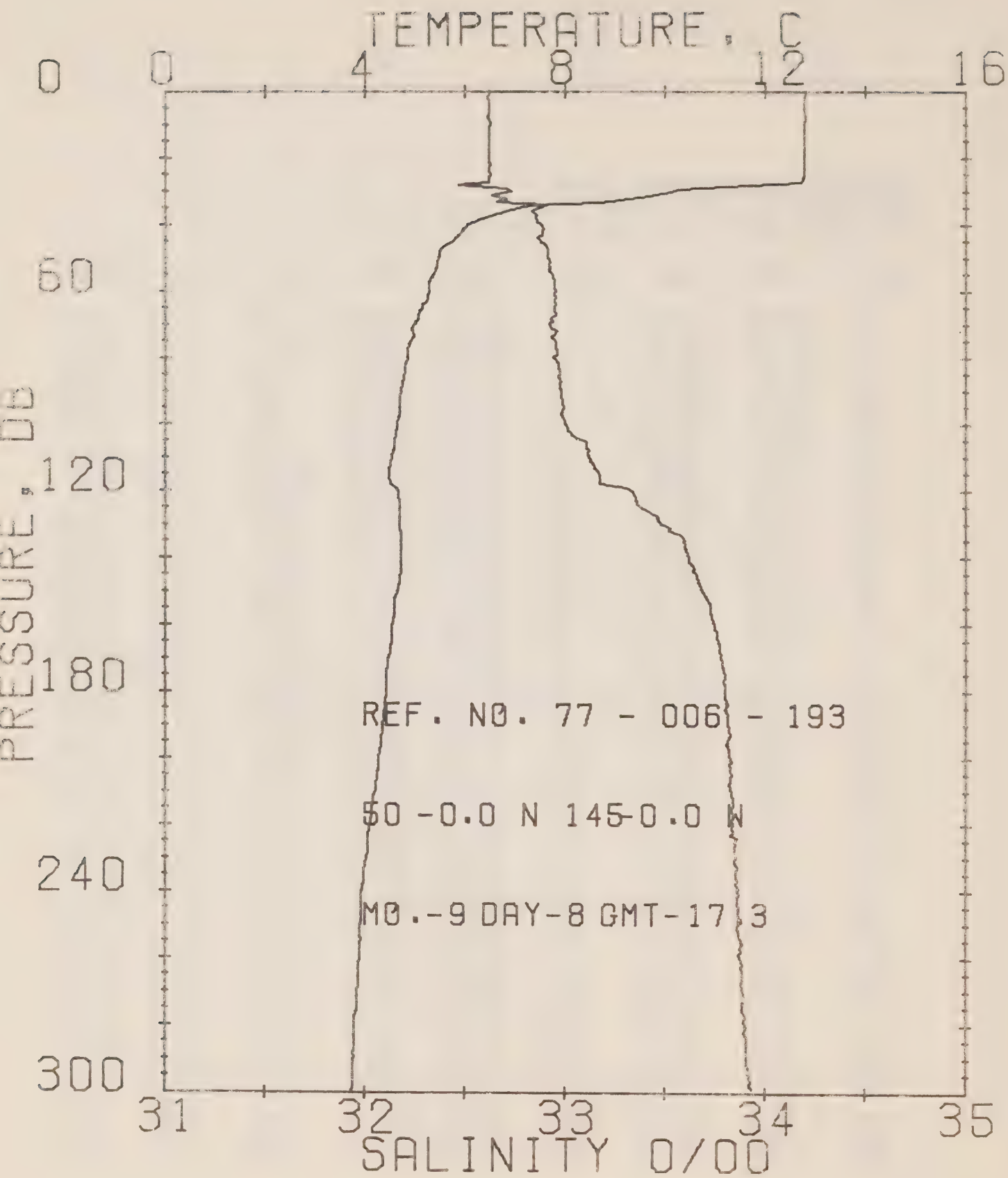
DATE 7/ 9/77

POSITION 50- .0N, 145- .0W

GMT 17.3

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.89	32.62	0	24.60	334.8	.00	.00	1498.
5	12.89	32.61	5	24.59	335.9	.17	.00	1498.
10	12.87	32.62	10	24.60	334.9	.34	.02	1498.
15	12.86	32.61	15	24.60	335.5	.50	.04	1498.
20	12.72	32.62	20	24.63	332.5	.67	.07	1497.
25	12.54	32.62	25	24.66	329.2	.84	.11	1497.
30	11.74	32.64	30	24.83	313.5	1.00	.15	1494.
35	7.57	32.82	35	25.65	235.7	1.13	.20	1479.
40	6.56	32.89	40	25.84	217.3	1.24	.24	1475.
45	5.88	32.90	45	25.94	208.0	1.35	.29	1473.
50	5.61	32.91	50	25.97	204.7	1.45	.34	1472.
55	5.47	32.93	55	26.00	201.7	1.56	.39	1471.
60	5.25	32.94	60	26.04	198.6	1.66	.45	1470.
65	5.22	32.92	65	26.03	199.4	1.75	.51	1470.
70	5.04	32.96	70	26.08	195.0	1.85	.58	1470.
75	4.94	32.95	75	26.09	194.2	1.95	.65	1469.
80	4.81	32.95	80	26.10	192.9	2.05	.73	1469.
90	4.70	32.98	89	26.13	189.9	2.24	.89	1469.
100	4.60	33.06	99	26.21	182.5	2.43	1.07	1468.
110	4.64	33.21	109	26.32	172.1	2.60	1.26	1469.
120	4.69	33.41	119	26.47	157.6	2.77	1.45	1470.
130	4.71	33.58	129	26.60	145.5	2.92	1.65	1470.
140	4.59	33.71	139	26.72	134.2	3.06	1.84	1470.
150	4.49	33.77	149	26.78	128.9	3.19	2.04	1470.
160	4.49	33.80	159	26.80	127.0	3.32	2.24	1470.
170	4.26	33.80	169	26.83	124.3	3.44	2.45	1469.
180	4.18	33.82	179	26.85	122.4	3.57	2.67	1469.
190	4.12	33.83	189	26.87	121.0	3.69	2.90	1469.
200	4.07	33.83	199	26.87	120.4	3.81	3.14	1469.
210	4.04	33.84	209	26.89	119.1	3.93	3.39	1469.
220	3.95	33.85	218	26.90	117.8	4.05	3.65	1469.
230	3.90	33.85	228	26.91	117.3	4.17	3.92	1469.
240	3.86	33.87	238	26.92	115.7	4.28	4.20	1469.
250	3.88	33.89	248	26.94	114.6	4.40	4.48	1469.
260	3.85	33.90	258	26.95	113.3	4.51	4.78	1469.
270	3.80	33.91	268	26.96	112.6	4.62	5.09	1469.
280	3.78	33.91	278	26.97	111.8	4.74	5.40	1469.
290	3.76	33.92	288	26.98	111.1	4.85	5.72	1469.
300	3.73	33.94	298	26.99	109.6	4.96	6.06	1469.





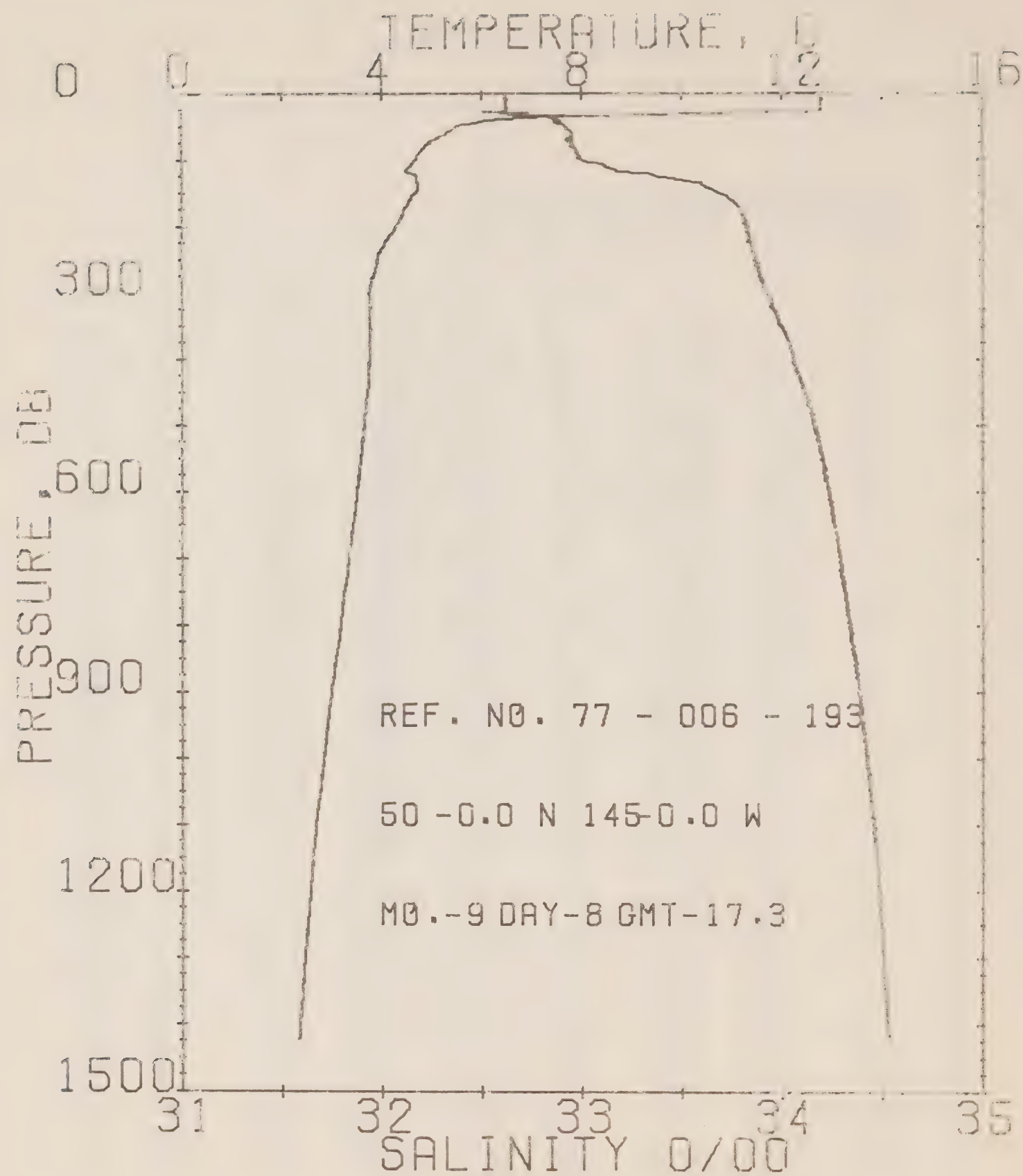
## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 17- 6-193

DATE 8/ 9/77

POSITION 50- .0N, 145- .0W GMT 17.3

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.79	32.62	0	24.61	333.4	.00	.00	1497.
5	12.77	32.62	5	24.62	333.0	.17	.00	1497.
10	12.77	32.63	10	24.62	332.6	.33	.02	1497.
15	12.77	32.62	15	24.62	333.3	.50	.04	1497.
20	12.77	32.62	20	24.62	333.3	.67	.07	1497.
25	12.77	32.62	25	24.62	333.2	.83	.11	1498.
30	10.12	32.73	30	25.18	279.8	.99	.15	1488.
35	6.96	32.86	35	25.77	224.3	1.12	.19	1477.
40	6.06	32.88	40	25.90	211.8	1.23	.23	1473.
45	5.73	32.88	45	25.93	208.3	1.33	.28	1472.
50	5.40	32.91	50	25.99	202.6	1.44	.33	1471.
55	5.37	32.94	55	26.02	199.9	1.54	.38	1471.
60	5.27	32.95	60	26.05	197.6	1.64	.44	1470.
65	5.14	32.95	65	26.06	196.7	1.74	.50	1470.
70	5.00	32.92	70	26.05	197.2	1.83	.57	1469.
75	4.91	32.95	75	26.09	193.9	1.93	.64	1469.
80	4.86	32.94	80	26.09	194.1	2.03	.72	1469.
90	4.71	32.98	89	26.13	190.1	2.22	.89	1469.
100	4.64	33.00	99	26.15	187.7	2.41	1.07	1468.
110	4.52	33.12	109	26.26	177.9	2.59	1.26	1468.
120	4.66	33.33	119	26.41	163.6	2.76	1.47	1469.
130	4.70	33.48	129	26.53	153.0	2.92	1.67	1470.
140	4.72	33.62	139	26.63	142.6	3.07	1.87	1470.
150	4.63	33.68	149	26.70	136.9	3.21	2.08	1470.
160	4.55	33.74	159	26.75	131.5	3.34	2.29	1470.
170	4.46	33.78	169	26.79	127.9	3.47	2.51	1470.
180	4.42	33.80	179	26.81	126.4	3.60	2.73	1470.
190	4.35	33.81	189	26.83	124.6	3.72	2.97	1470.
200	4.28	33.83	199	26.85	122.8	3.85	3.21	1470.
210	4.19	33.83	209	26.86	121.8	3.97	3.47	1470.
220	4.09	33.84	218	26.88	120.1	4.09	3.74	1469.
230	4.02	33.85	228	26.89	118.7	4.21	4.01	1469.
240	3.93	33.86	236	26.91	117.2	4.33	4.25	1469.
250	3.91	33.86	248	26.92	116.7	4.44	4.50	1469.
260	3.89	33.87	258	26.92	115.9	4.56	4.80	1469.
270	3.85	33.89	263	26.94	114.4	4.68	5.19	1469.
280	3.78	33.90	278	26.95	113.2	4.79	5.51	1469.
290	3.77	33.91	288	26.96	112.5	4.90	5.84	1469.
300	3.74	33.93	298	26.96	110.5	5.01	6.18	1469.



## OFFSHORE OCEANOGRAPHY GROUP

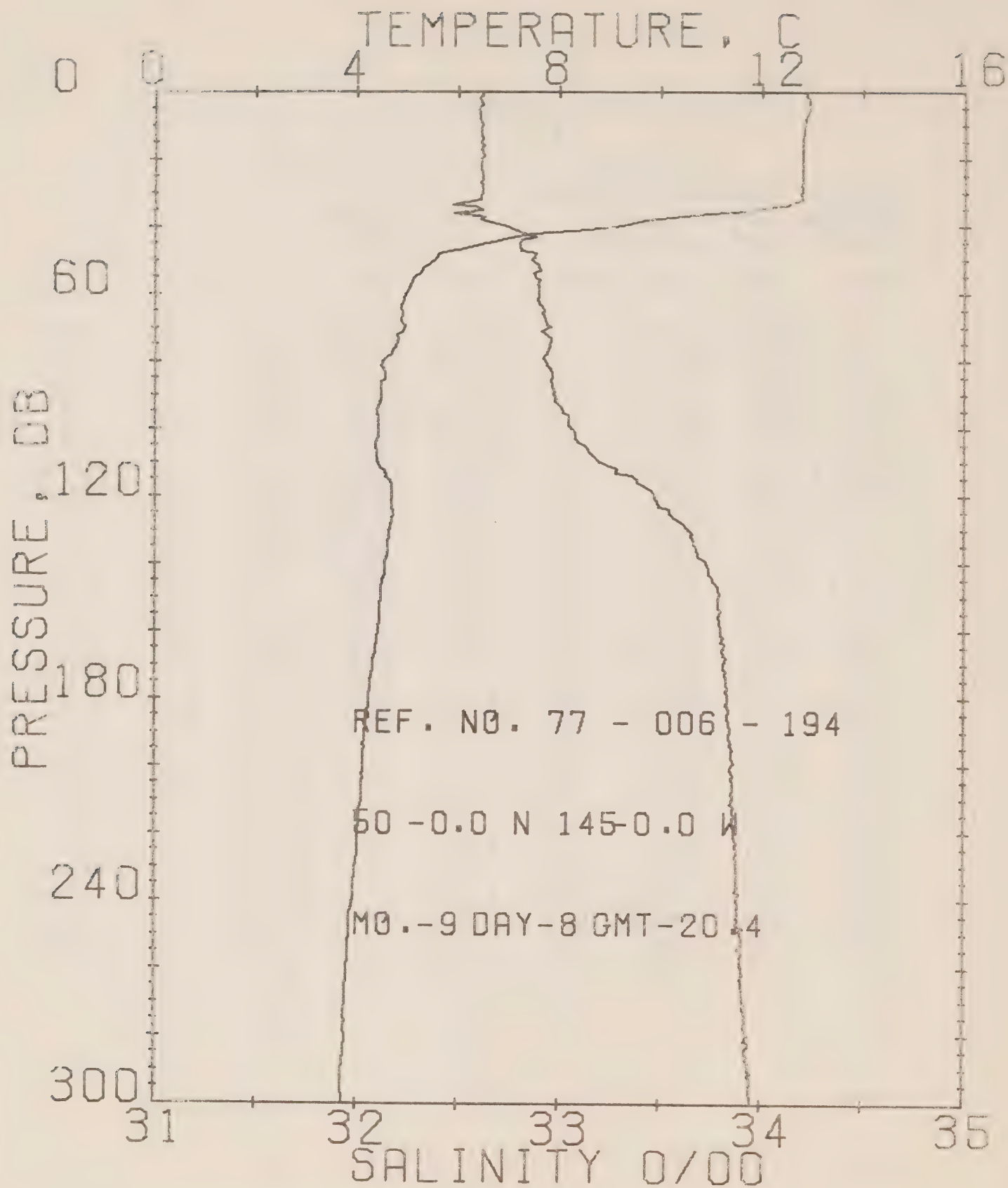
REFERENCE NO. 77- 6-193

DATE 8/ 9/77

POSITION 50- 00N, 145- 00W GMT 17.3

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.79	32.62	0	24.61	333.4	.00	.00	1497.
50	5.46	32.91	50	25.99	202.6	1.44	.35	1471.
100	4.64	33.00	99	26.15	187.7	2.41	1.07	1468.
150	4.63	33.68	149	26.70	136.9	3.21	2.08	1470.
200	4.28	33.83	199	26.85	122.8	3.85	3.21	1470.
250	3.91	33.86	248	26.92	116.7	4.44	4.56	1469.
300	3.74	33.93	298	26.98	110.5	5.01	6.18	1469.
350	3.77	34.00	347	27.04	106.0	5.56	7.97	1470.
400	3.75	34.06	397	27.09	101.7	6.08	9.96	1471.
450	3.71	34.11	446	27.13	97.6	6.57	12.12	1472.
500	3.65	34.16	496	27.18	93.7	7.05	14.43	1472.
550	3.57	34.20	545	27.22	90.3	7.51	16.86	1473.
600	3.49	34.24	595	27.26	87.0	7.96	19.49	1473.
650	3.42	34.26	644	27.28	85.0	8.39	22.24	1474.
700	3.32	34.29	694	27.31	82.2	8.81	25.11	1474.
750	3.23	34.31	743	27.34	79.9	9.21	28.12	1475.
800	3.16	34.34	793	27.36	77.7	9.61	31.23	1476.
850	3.06	34.36	842	27.39	75.1	9.99	34.45	1476.
900	2.98	34.38	891	27.41	73.3	10.36	37.74	1476.
950	2.90	34.40	941	27.44	71.3	10.72	41.13	1477.
1000	2.83	34.43	990	27.47	68.6	11.07	44.61	1477.
1050	2.75	34.44	1040	27.48	67.1	11.41	48.18	1473.
1100	2.67	34.46	1089	27.51	65.1	11.74	51.81	1478.
1150	2.61	34.48	1138	27.53	63.5	12.06	55.51	1479.
1200	2.56	34.48	1188	27.53	62.8	12.38	59.30	1480.
1250	2.50	34.49	1237	27.55	61.9	12.69	63.16	1480.
1300	2.44	34.51	1286	27.56	60.3	12.99	67.14	1481.
1350	2.40	34.52	1336	27.58	58.8	13.29	71.17	1482.
1400	2.35	34.53	1385	27.59	57.8	13.59	75.25	1482.





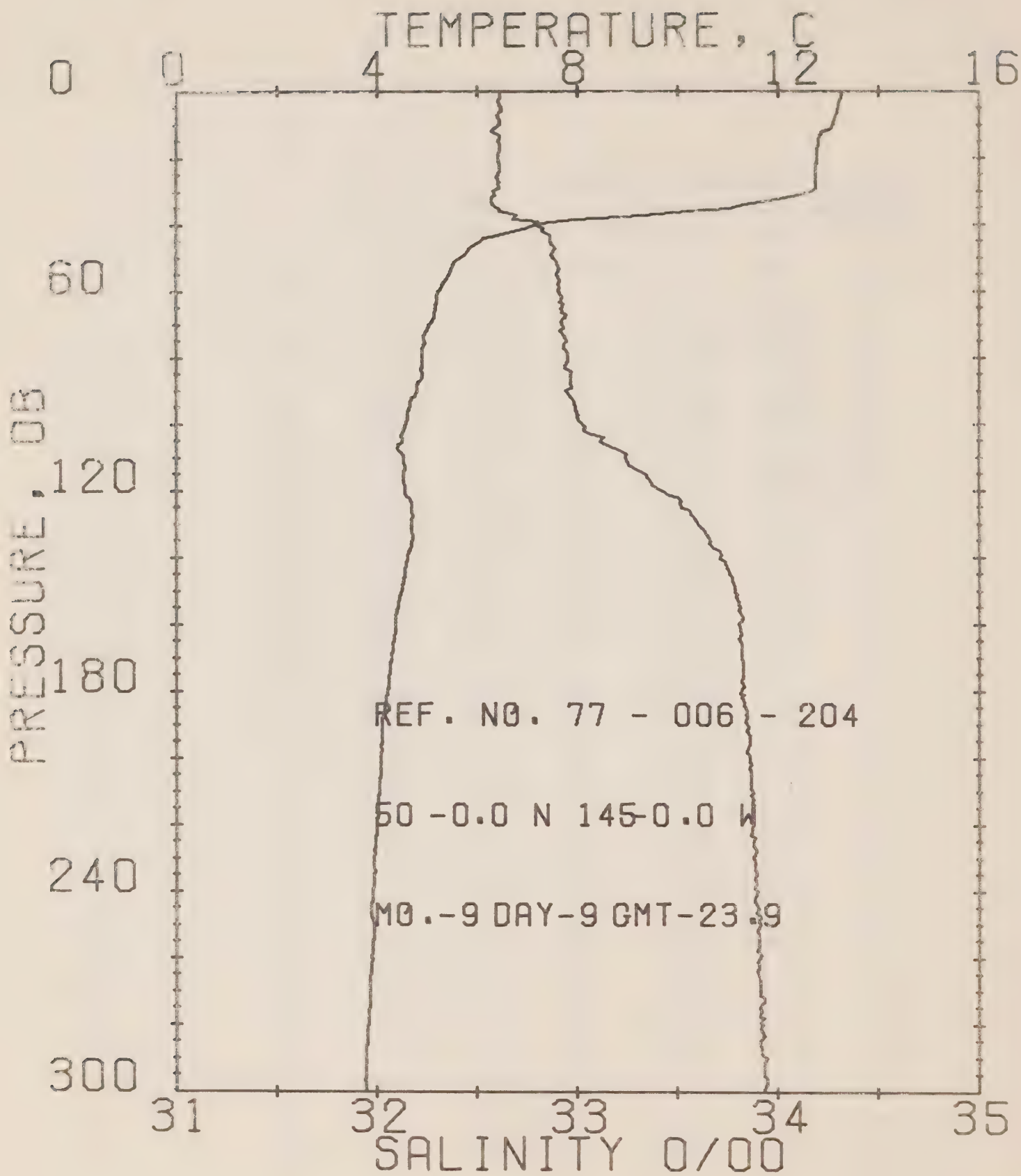
## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8-194

DATE 8/ 9/77

POSITION 50- .0N, 145- .0W GMT 20.5

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	PCT. EN	SOUND
0	12.89	32.62	0	24.60	335.2	.00	.00	1493.
5	12.92	32.60	5	24.58	337.2	.17	.00	1498.
10	12.63	32.62	10	24.61	334.3	.34	.02	1497.
15	12.60	32.61	15	24.61	334.3	.50	.04	1497.
20	12.79	32.62	20	24.61	334.0	.67	.07	1498.
25	12.79	32.62	25	24.61	334.1	.84	.11	1498.
30	12.78	32.62	30	24.62	333.7	1.00	.15	1498.
35	11.79	32.62	35	24.80	316.1	1.17	.21	1494.
40	9.11	32.74	40	25.36	263.5	1.31	.26	1485.
45	8.45	32.61	45	25.79	222.2	1.43	.31	1475.
50	5.53	32.67	50	25.95	206.6	1.54	.37	1471.
55	5.14	32.68	55	26.01	201.5	1.64	.42	1470.
60	4.98	32.90	60	26.04	198.5	1.74	.46	1469.
65	4.91	32.93	65	26.07	195.7	1.84	.54	1469.
70	4.94	32.96	70	26.09	193.7	1.94	.61	1469.
75	4.78	32.95	75	26.10	192.4	2.03	.66	1469.
80	4.51	32.93	80	26.12	191.2	2.13	.70	1468.
90	4.48	32.98	89	26.15	187.7	2.32	.92	1468.
100	4.43	33.06	99	26.23	180.9	2.50	1.16	1468.
110	4.41	33.20	109	26.34	170.7	2.68	1.29	1468.
120	4.70	33.47	119	26.52	153.5	2.84	1.47	1470.
130	4.64	33.64	129	26.66	139.8	2.99	1.66	1470.
140	4.56	33.72	139	26.74	133.0	3.12	1.85	1470.
150	4.47	33.79	149	26.80	127.4	3.25	2.04	1470.
160	4.42	33.80	159	26.81	125.8	3.38	2.24	1475.
170	4.32	33.82	169	26.83	124.0	3.50	2.45	1469.
180	4.23	33.83	179	26.86	121.9	3.63	2.67	1469.
190	4.16	33.84	189	26.87	120.3	3.75	2.90	1469.
200	4.12	33.86	199	26.89	119.1	3.87	3.14	1469.
210	4.10	33.86	209	26.89	118.5	3.99	3.39	1469.
220	4.04	33.86	218	26.90	117.7	4.11	3.64	1469.
230	3.97	33.88	226	26.92	115.9	4.22	3.91	1469.
240	3.92	33.88	238	26.93	115.5	4.34	4.19	1469.
250	3.86	33.90	248	26.95	113.5	4.45	4.46	1469.
260	3.81	33.91	258	26.96	112.6	4.57	4.77	1469.
270	3.78	33.91	268	26.97	112.0	4.68	5.07	1469.
280	3.79	33.94	276	26.99	110.2	4.79	5.36	1469.
290	3.72	33.94	288	26.99	109.6	4.90	5.71	1469.
300	3.74	33.95	298	27.01	108.6	5.01	6.06	1469.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6-204

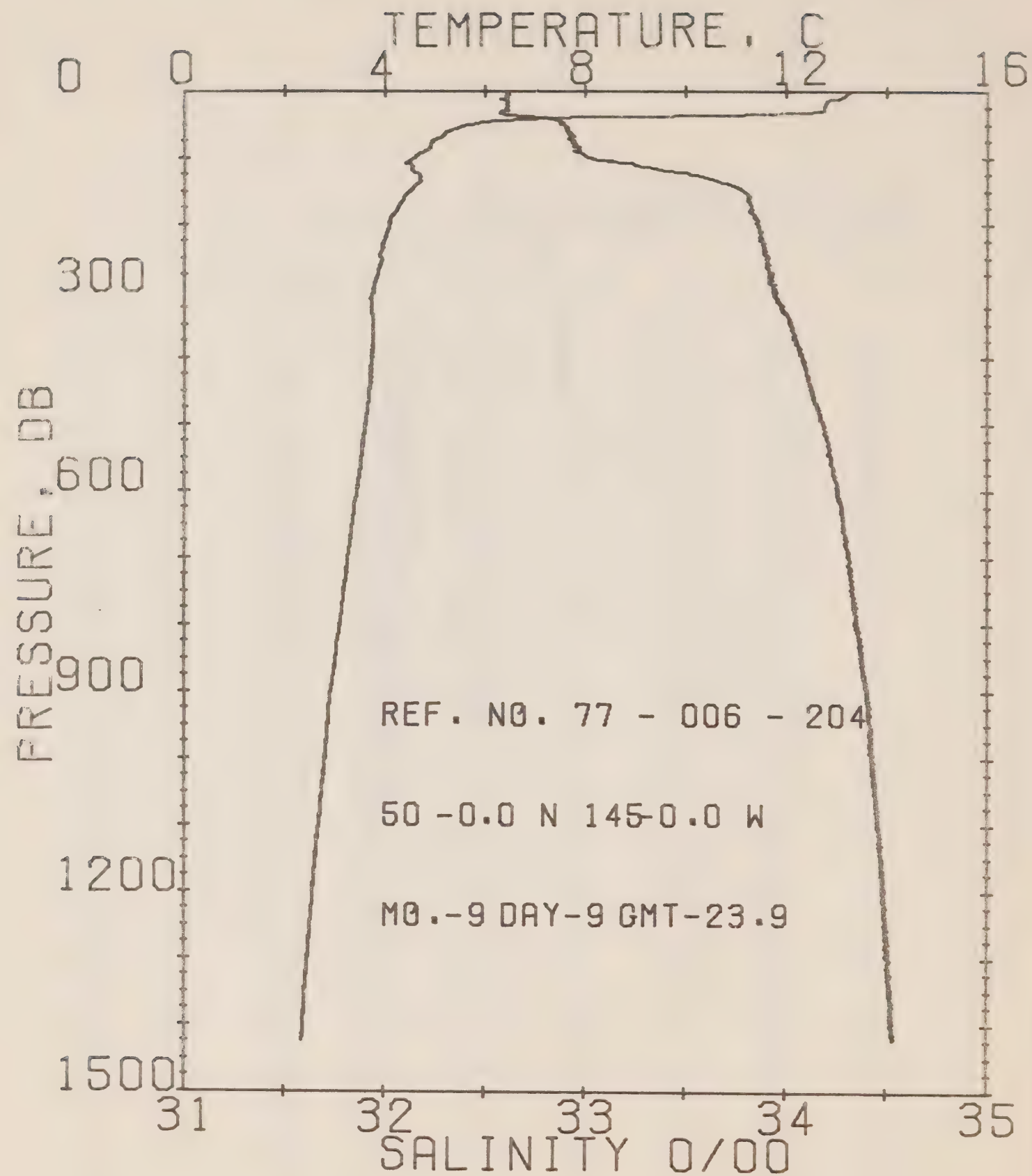
DATE 9/ 9/77

POSITION 50- .0N, 145- .0W

GMT 23.9

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	15.25	32.61	0	24.52	342.2	.00	.00	1499.
5	15.18	32.62	5	24.54	340.7	.17	.00	1499.
10	15.09	32.61	10	24.55	339.7	.34	.02	1498.
15	12.81	32.61	15	24.60	335.1	.51	.04	1497.
20	12.78	32.61	20	24.61	334.5	.68	.07	1497.
25	12.75	32.61	25	24.61	334.1	.84	.11	1497.
30	12.68	32.59	30	24.61	334.4	1.01	.15	1497.
35	11.09	32.60	35	24.92	305.3	1.17	.21	1492.
40	7.16	32.60	40	25.69	232.0	1.30	.26	1477.
45	6.05	32.86	45	25.86	213.0	1.41	.31	1475.
50	5.65	32.88	50	25.94	207.4	1.52	.36	1472.
55	5.44	32.90	55	25.99	203.4	1.62	.41	1471.
60	5.22	32.91	60	26.02	200.4	1.72	.47	1470.
65	5.17	32.92	65	26.03	199.1	1.82	.53	1470.
70	5.05	32.92	70	26.05	197.5	1.92	.60	1470.
75	4.95	32.95	75	26.08	194.8	2.02	.67	1469.
80	4.91	32.95	80	26.09	194.1	2.12	.75	1469.
90	4.61	32.95	89	26.09	193.5	2.31	.92	1469.
100	4.56	33.03	99	26.19	184.8	2.50	1.10	1468.
110	4.54	33.24	109	26.36	168.9	2.68	1.29	1469.
120	4.57	33.42	119	26.49	155.9	2.84	1.48	1469.
130	4.69	33.61	129	26.63	143.2	2.99	1.67	1470.
140	4.61	33.72	139	26.72	134.1	3.13	1.86	1470.
150	4.49	33.79	149	26.79	127.7	3.26	2.05	1470.
160	4.38	33.61	159	26.82	124.9	3.38	2.25	1469.
170	4.29	33.82	169	26.84	123.3	3.50	2.46	1469.
180	4.22	33.62	179	26.85	122.6	3.63	2.66	1469.
190	4.12	33.65	189	26.88	119.5	3.75	2.91	1469.
200	4.08	33.66	199	26.89	118.6	3.87	3.14	1469.
210	4.05	33.88	209	26.91	116.9	3.98	3.39	1469.
220	4.00	33.88	218	26.92	116.3	4.10	3.64	1469.
230	3.95	33.66	228	26.93	115.6	4.22	3.91	1469.
240	3.92	33.90	238	26.94	114.3	4.33	4.19	1469.
250	3.94	33.91	248	26.95	113.6	4.45	4.47	1469.
260	3.91	33.91	258	26.95	113.2	4.56	4.77	1469.
270	3.87	33.91	268	26.96	112.9	4.67	5.07	1469.
280	3.83	33.92	278	26.97	111.6	4.79	5.39	1469.
290	3.79	33.95	288	26.99	109.7	4.90	5.71	1469.
300	3.78	33.94	298	26.99	109.9	5.01	6.04	1469.





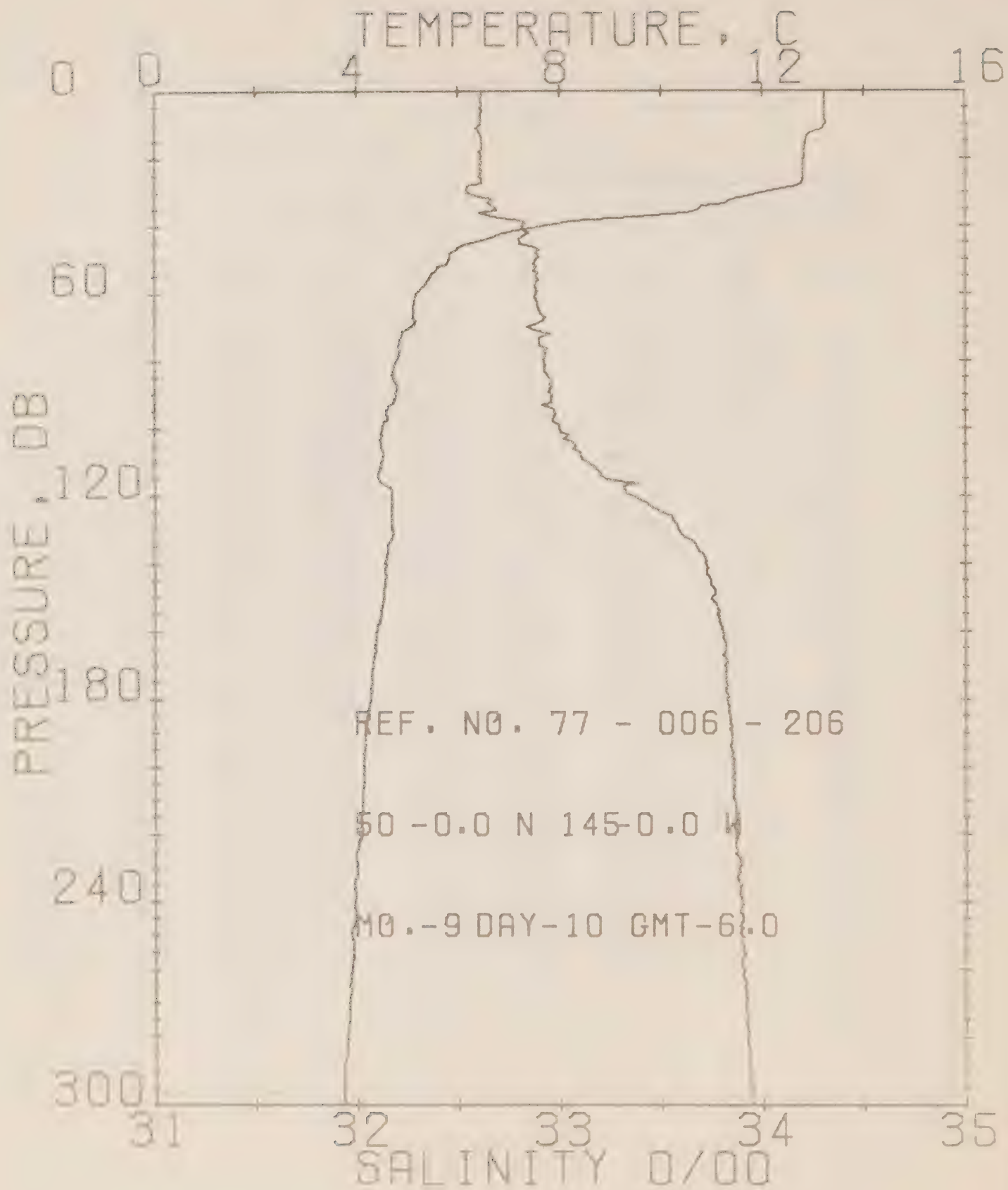
## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8-204

DATE 9/ 9/77

POSITION 50- .0N, 145- .0W GMT 23.9

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	13.25	32.61	0	24.52	342.2	.00	.00	1499.
50	5.65	32.88	50	25.94	207.4	1.52	.36	1472.
100	4.56	33.03	99	26.19	184.8	2.50	1.10	1468.
150	4.49	33.79	149	26.79	127.7	3.26	2.05	1470.
200	4.08	33.86	199	26.89	118.6	3.87	3.14	1469.
250	3.94	33.91	248	26.95	113.6	4.45	4.47	1469.
300	3.78	33.94	298	26.99	109.9	5.01	6.04	1469.
350	3.76	34.03	347	27.06	103.9	5.54	7.31	1470.
400	3.74	34.08	397	27.10	100.0	6.05	9.76	1471.
450	3.69	34.13	446	27.15	96.3	6.54	11.69	1472.
500	3.62	34.18	496	27.20	91.7	7.01	14.17	1472.
550	3.53	34.23	545	27.24	88.1	7.46	16.57	1473.
600	3.44	34.26	595	27.27	85.4	7.90	19.12	1473.
650	3.34	34.29	644	27.31	82.3	8.32	21.76	1474.
700	3.25	34.32	694	27.34	79.6	8.72	24.56	1474.
750	3.18	34.33	743	27.36	78.2	9.12	27.49	1475.
800	3.11	34.34	793	27.37	76.9	9.50	30.54	1475.
850	3.02	34.36	842	27.41	73.6	9.88	33.66	1476.
900	2.92	34.41	891	27.44	70.6	10.24	36.91	1476.
950	2.86	34.42	941	27.46	69.4	10.59	40.21	1477.
1000	2.81	34.43	990	27.47	68.7	10.93	43.64	1477.
1050	2.74	34.44	1040	27.49	66.9	11.27	47.18	1478.
1100	2.68	34.46	1089	27.50	65.6	11.60	50.80	1479.
1150	2.61	34.48	1138	27.53	63.2	11.93	54.50	1479.
1200	2.56	34.48	1186	27.53	62.8	12.24	58.26	1480.
1250	2.51	34.49	1237	27.55	61.8	12.55	62.16	1480.
1300	2.46	34.51	1286	27.56	60.5	12.86	66.13	1481.
1350	2.41	34.53	1336	27.58	58.9	13.16	70.16	1482.
1400	2.37	34.52	1385	27.58	58.7	13.45	74.28	1482.



## OFFSHORE OCEANOGRAPHY GROUP

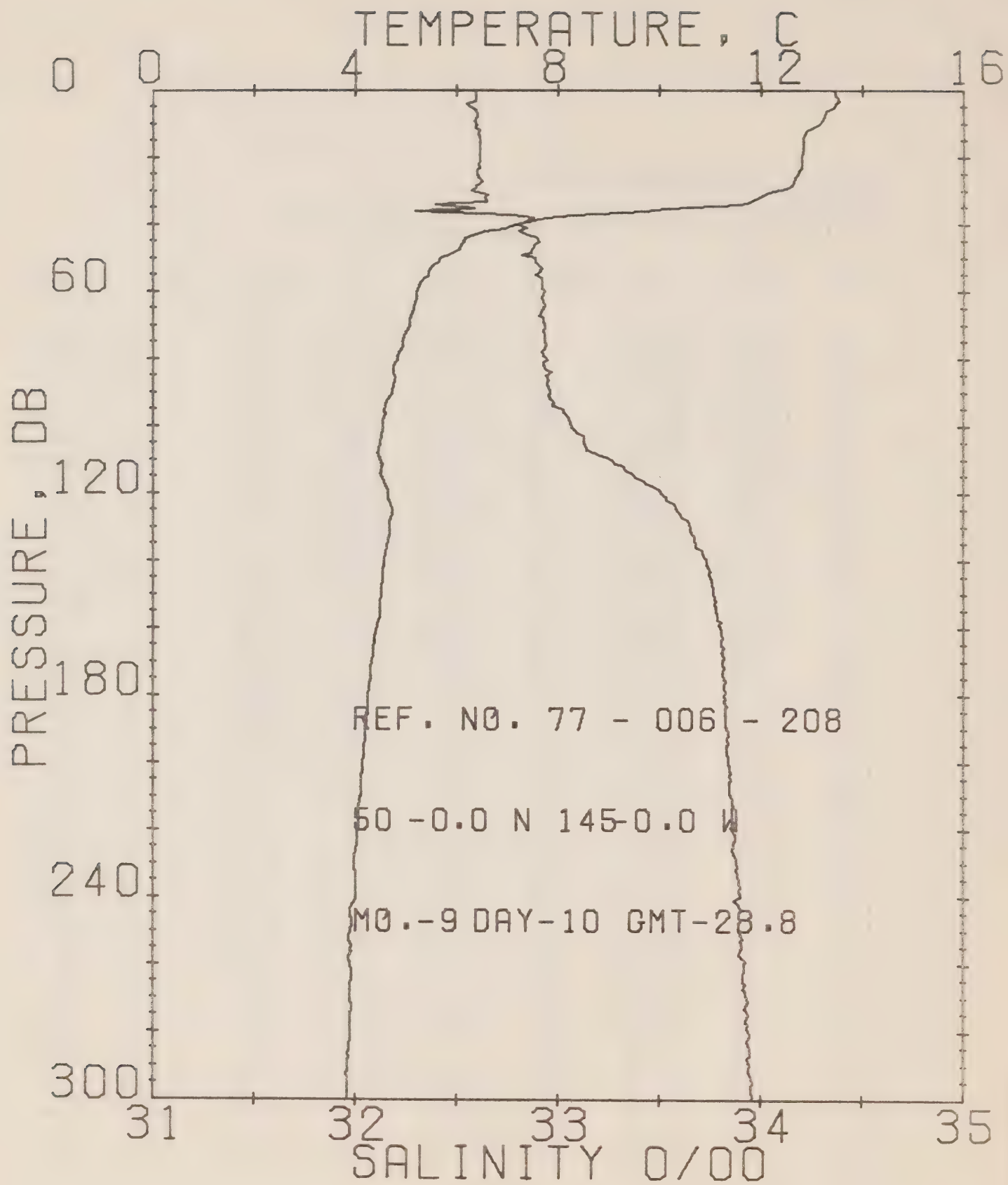
REFERENCE NO. 77- 6-206

DATE 10/ 9/77

POSITION 50- .0N, 145- .0W GMT 6.0

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	13.23	32.62	0	24.53	341.7	.00	.00	1499.
5	13.23	32.61	5	24.53	342.1	.17	.00	1499.
10	13.23	32.61	10	24.52	342.6	.34	.02	1499.
15	12.85	32.62	15	24.60	334.8	.51	.04	1498.
20	12.81	32.61	20	24.61	334.7	.68	.07	1498.
25	12.79	32.61	25	24.61	334.7	.85	.11	1498.
30	12.05	32.55	30	24.70	326.0	1.01	.15	1495.
35	10.73	32.69	35	25.05	292.8	1.17	.20	1491.
40	7.67	32.62	40	25.63	237.0	1.30	.26	1479.
45	6.23	32.61	45	25.82	219.5	1.41	.30	1474.
50	5.81	32.89	50	25.93	208.4	1.52	.36	1472.
55	5.46	32.89	55	25.98	204.5	1.62	.41	1471.
60	5.19	32.89	60	26.01	201.5	1.72	.47	1470.
65	5.12	32.90	65	26.03	199.7	1.82	.53	1470.
70	5.05	32.84	70	25.99	203.5	1.92	.60	1469.
75	4.83	32.90	75	26.06	197.0	2.02	.66	1469.
80	4.77	32.92	80	26.08	194.9	2.12	.75	1469.
90	4.78	32.96	89	26.11	192.1	2.31	.92	1469.
100	4.50	33.00	99	26.17	186.4	2.50	1.10	1468.
110	4.49	33.14	109	26.28	176.0	2.68	1.30	1468.
120	4.69	33.36	119	26.43	161.4	2.85	1.49	1470.
130	4.71	33.59	129	26.61	144.9	3.00	1.69	1470.
140	4.57	33.72	139	26.73	133.4	3.14	1.88	1470.
150	4.53	33.75	149	26.76	130.5	3.27	2.07	1470.
160	4.39	33.80	159	26.82	125.5	3.40	2.27	1469.
170	4.32	33.81	169	26.83	124.0	3.52	2.48	1469.
180	4.26	33.82	179	26.85	122.7	3.65	2.70	1469.
190	4.16	33.84	189	26.87	120.3	3.77	2.90	1469.
200	4.13	33.86	199	26.89	119.1	3.89	3.17	1469.
210	4.10	33.86	209	26.89	118.6	4.01	3.42	1469.
220	4.07	33.86	218	26.90	118.1	4.12	3.68	1469.
230	4.01	33.88	228	26.92	116.4	4.24	3.94	1469.
240	3.96	33.90	238	26.94	114.7	4.36	4.22	1469.
250	3.90	33.90	248	26.94	114.3	4.47	4.51	1469.
260	3.90	33.91	258	26.95	113.2	4.59	4.80	1469.
270	3.85	33.91	268	26.96	112.7	4.70	5.11	1469.
280	3.80	33.92	278	26.97	111.5	4.81	5.42	1469.
290	3.74	33.94	288	26.99	109.8	4.92	5.74	1469.





## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6-208

DATE 10/ 9/77

POSITION 50- .0N, 145- .0W

GMT 23.8

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	13.46	32.59	0	24.46	347.6	.00	.00	1499.
5	13.44	32.57	5	24.45	349.1	.17	.00	1499.
10	13.14	32.59	10	24.53	342.0	.35	.02	1499.
15	12.83	32.61	15	24.60	334.8	.52	.04	1498.
20	12.81	32.61	20	24.61	334.8	.68	.07	1498.
25	12.72	32.60	25	24.61	334.0	.85	.11	1497.
30	12.27	32.57	30	24.68	327.9	1.02	.15	1496.
35	10.48	32.54	35	24.96	299.3	1.17	.21	1490.
40	7.17	32.82	40	25.70	230.5	1.30	.26	1477.
45	6.12	32.90	45	25.91	211.0	1.41	.30	1474.
50	5.69	32.88	50	25.94	208.0	1.52	.35	1472.
55	5.43	32.89	55	25.98	204.0	1.62	.41	1471.
60	5.20	32.93	60	26.04	198.6	1.72	.47	1470.
65	5.15	32.93	65	26.04	198.4	1.82	.53	1470.
70	5.06	32.94	70	26.06	196.8	1.92	.60	1470.
75	4.93	32.93	75	26.07	195.5	2.02	.67	1469.
80	4.82	32.94	80	26.09	194.1	2.12	.75	1469.
90	4.73	32.96	89	26.11	191.6	2.31	.92	1469.
100	4.53	33.07	99	26.22	181.7	2.50	1.10	1468.
110	4.49	33.26	109	26.38	166.8	2.67	1.26	1468.
120	4.65	33.51	119	26.56	149.9	2.83	1.47	1470.
130	4.67	33.65	129	26.67	139.5	2.97	1.65	1470.
140	4.56	33.73	139	26.74	132.3	3.11	1.84	1470.
150	4.50	33.77	149	26.78	129.1	3.24	2.03	1470.
160	4.40	33.80	159	26.82	125.6	3.37	2.24	1470.
170	4.31	33.82	169	26.83	123.9	3.49	2.45	1469.
180	4.25	33.82	179	26.85	122.7	3.62	2.67	1469.
190	4.19	33.83	189	26.86	121.4	3.74	2.90	1469.
200	4.14	33.84	199	26.87	120.5	3.86	3.14	1469.
210	4.09	33.85	209	26.89	119.1	3.98	3.39	1469.
220	4.03	33.86	218	26.90	117.9	4.10	3.65	1469.
230	3.98	33.88	228	26.92	116.1	4.21	3.91	1469.
240	3.99	33.90	238	26.93	115.0	4.33	4.19	1469.
250	3.89	33.89	248	26.94	114.3	4.44	4.46	1469.
260	3.89	33.92	258	26.96	112.4	4.56	4.77	1469.
270	3.91	33.93	268	26.97	111.8	4.67	5.08	1469.
280	3.88	33.94	278	26.98	110.9	4.78	5.39	1470.
290	3.83	33.95	288	26.99	109.9	4.89	5.71	1469.
300	3.84	33.96	298	27.00	109.4	5.00	6.04	1470.









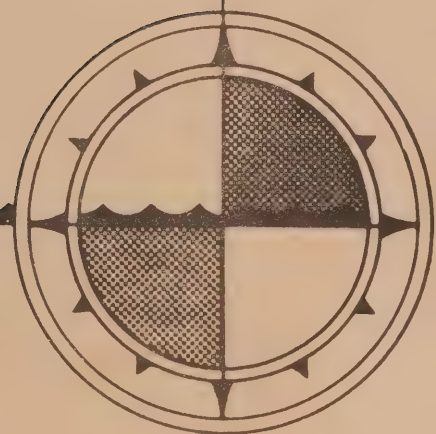
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**OCEANOGRAPHIC OBSERVATIONS AT  
STATIONS ALONG THE TRIANGULAR GRIDS  
DURING THE MIXED LAYER EXPERIMENT  
August 1, 1978  
Volume 84-C**



by  
**M. Miyake**

**INSTITUTE OF OCEAN SCIENCES, PATRICIA BAY  
Sidney, B.C.**



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Sidney, B.C.

1979



This is a manuscript which has received only limited circulation. On citing this report in a bibliography, the title should be followed by the words "UNPUBLISHED MANUSCRIPT" which is in accordance with accepted bibliographic custom.

# ABSTRACT

Intense physical oceanographic observations were made from the CCGS Quadra during the Mixed Layer Experiment. Profiles of conductivity - temperature - pressure by Guideline System 8700 for MILE Grid locations are presented.

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## INTRODUCTION

Canadian observation of Ocean Weather Station P (Latitude  $50^{\circ} 00' N$ ; Longitude  $145^{\circ} 00' W$ ) was inaugurated in December, 1950. The weathership has continuously been making routine meteorological observations of the surface (every 3 hours) and upper air (twice daily), plus chemical, biological and physical oceanographic observations. The station is manned by two vessels operated by the Marine Services Branch of the Ministry of Transport. They are the CCGS Vancouver and the CCGS Quadra. Each ship remains at the station for a period of six weeks, and is then relieved by the alternate ship, thus maintaining a continuous watch.

Bathythermograph observations have been made at Station P since July 1952. A program of more extensive oceanographic observations commenced in August 1956. This was extended in April 1959, by the addition of a series of oceanographic stations along the route to and from Station P and the Swiftsure Bank. These stations are known as Line P stations.

During the cruise of the CCGS Quadra July-September 1977, a Mixed Layer Experiment was staged at Ocean Station P. This report contains STD profiles obtained at different geographical locations from two major grids positioned northwest and south of Station P during the period August 10th to September 9th, 1977. Also included are eight casts obtained after a rescue mission toward Kodiak, Alaska.

- "Oceanographic Observations at Ocean Station P", Volume 84, will be referred to as Volume 84A. It contains daily STD profiles (62 casts) and hydrographic casts at Station P and Line P stations.
- Volume 84B contains all on-station STD profiles (97 casts).
- Volume 84C contains STD profiles (70 casts) obtained at MILE grid stations and stations toward Kodiak, Alaska.



PROGRAM OF OBSERVATIONS FROM THE CCGS QUADRA - August 10 to September 9, 1977

For the Mixed Layer Experiment, a team from Offshore Oceanography at the Institute of Ocean Sciences, Patricia Bay and the Institute of Oceanography at the University of British Columbia completed STD, XBT and CSP casts. The team, headed by Mikio Miyake, consisted of:

Cor de Jong

Paul Lacroix

Rick Corman

This report contains all STD data (70 casts) collected along the MILE grids and Kodiak run. The 14 casts taken at Ocean Station P are also reported in Volume 84B, "Oceanographic Observations at Ocean Station P During Mixed Layer Experiment".

OBSERVATION PROCEDURES

STP profiles were taken with a Guideline Model 8700 STP system and the data were logged onto a 9-track magnetic tape using a Hewlett-Packard 2100A mini-computer and a 7970B digital tape unit.

COMPUTATIONS

The STP raw data were calibrated and salinity was calculated using the RIBE-HOWE equation on a HP2116B at the Institute of Ocean Sciences, Patricia Bay. A 9-track digital tape containing 1 reading per metre was created. This tape was used on a Univac 1106 to produce the data listings and plots in the report.

The headings for the data listings are explained as follows:

PRESS	is pressure (decibars)
TEMP	is temperature (degrees Celsius)
SAL	is salinity (parts per thousand)
DEPTH	is reported in metres
SIGMA-T	is specific gravity anomaly

SVA	is specific volume anomaly
DELTA D	is geopotential anomaly (J/Kg)
POT EN	is potential energy in units of $10^8$ ergs/cm <sup>2</sup>
SOUND	is velocity of sound in m/sec.

## LOG OF STD OBSERVATIONS MILE.

CONSEC. #	POSITION	DATE (Z)	TIME (Z)	STD.
036	P	10/08/77	1724	1,420
037	E101	11/08/77	0107	1,420
038	W101	11/08/77	0930	1,420
039	P	11/08/77	1720	1,420
054	P	16/08/77	1705	1,420
055	E101	17/08/77	0132	1,420
056	W101	17/08/77	0932	1,420
057	P	17/08/77	1710	1,420
058	KOD1	18/08/77	2224	310
059	KOD2	19/08/77	0236	300 rescue
060	KOD3	19/08/77	0850	310 mission
061	KOD4	19/08/77	1200	310 toward
062	KOD5	19/08/77	1445	315 Kodiak
063	KOD6	19/08/77	1742	310
064	KOD7	19/08/77	2032	310
065	KOD8	19/08/77	2232	310
080	P	24/08/77	1713	1,420
082	E3	24/08/77	2056	210
083	E4	24/08/77	2306	210
084	E101	25/08/77	0107	1,420
085	S8	25/08/77	0409	210
086	S7	25/08/77	0536	210
087	W101	25/08/77	0736	1,420
088	W4	25/08/77	1004	210
089	W3	25/08/77	1300	300
090	P	25/08/77	1714	1,420
116	P	29/08/77	2023	300
117	E3	29/08/77	2355	300
118	E4	30/08/77	0218	300
119	E101	30/08/77	0410	1,420
121	S8	30/08/77	0735	300
122	C1	30/08/77	0912	300
123	S7	30/08/77	1133	300
124	W101	30/08/77	1344	300
125	W4	30/08/77	1611	300
126	W3	30/08/77	1840	300
127	P	30/08/77	2034	300
145	P	02/09/77	1805	1,200
146	W3	02/09/77	2341	300
147	W4	03/09/77	0134	300
148	W101	03/09/77		1,420
149	S7	03/09/77	0550	300
150	C1	03/09/77	0755	300
151	S8	03/09/77	0937	300
152	E101	03/09/77	1134	1,420
153	E4	03/09/77		300
154	E3	03/09/77		300
155	P	03/09/77	1736	300
183	P	07/09/77	1719	300

CONSEC. #	POSITION	DATE (Z)	TIME (Z)	STD.
184	N8	07/09/77	2009	300
185	NC	07/09/77	2152	300
186	N7	08/09/77	0015	300
187	N101	08/09/77	0306	1,420
188	NW4	08/09/77	0534	300
189	NW3	08/09/77	0754	300
190	NPAP	08/09/77	0805	1,420
191	NE3	08/09/77	1219	300
192	NE4	08/09/77	1418	300
193	P	08/09/77	1717	1,420
194	P	08/09/77	2028	300
195	C1	09/09/77	0151	300
196	E4	09/09/77	0351	300
197	E101	09/09/77	0557	1,420
198	S8	09/09/77	0841	300
199	S7	09/09/77	1140	300
200	W101	09/09/77	1409	1,420
201	W4	09/09/77	1710	300
202	W3	09/09/77	1916	300
203	E3	09/09/77	2130	300
204	P	09/09/77	2353	1,420



SUB STATION POSITIONS FOR 'MILE' DATA

STATION	LAT.	LONG.
P	50 00' N	145 00' W
E3	49 52' N	144 52' W
E4	49 43' N	144 44' W
C1	49 42' N	145 00' W
W4	49 43' N	145 15' W
W3	49 52' N	145 07' W
E101	49 34' N	144 37' W
W101	49 34' N	145 23' W
S7	49 34' N	145 08' W
S8	49 34' N	144 52' W
N8	50 00' N	145 18' W
NC	50 08' N	145 28' W
N7	50 00' N	145 37' W
N101	50 00' N	145 55' W
NW4	50 08' N	145 46' W
NW3	50 17' N	145 37' W
NPAP	50 26' N	145 28' W
NE3	50 17' N	145 18' W
NE4	50 08' N	145 07' W

SUB-STATION POSITIONS.

STATION	LAT.	LONG.
KOD1	53 38' N	147 34' W
KOD2	53 00' N	147 08' W
KOD3	52 00' N	146 22' W
KOD4	51 30' N	146 00' W
KOD5	51 00' N	146 00' W
KOD6	50 30' N	146 00' W
KOD7	50 00' N	146 00' W
KOD8	50 00' N	145 30' W
PAPA	50 00' N	145 00' W

## CHART SHOWING 'MILE' GRIDS.

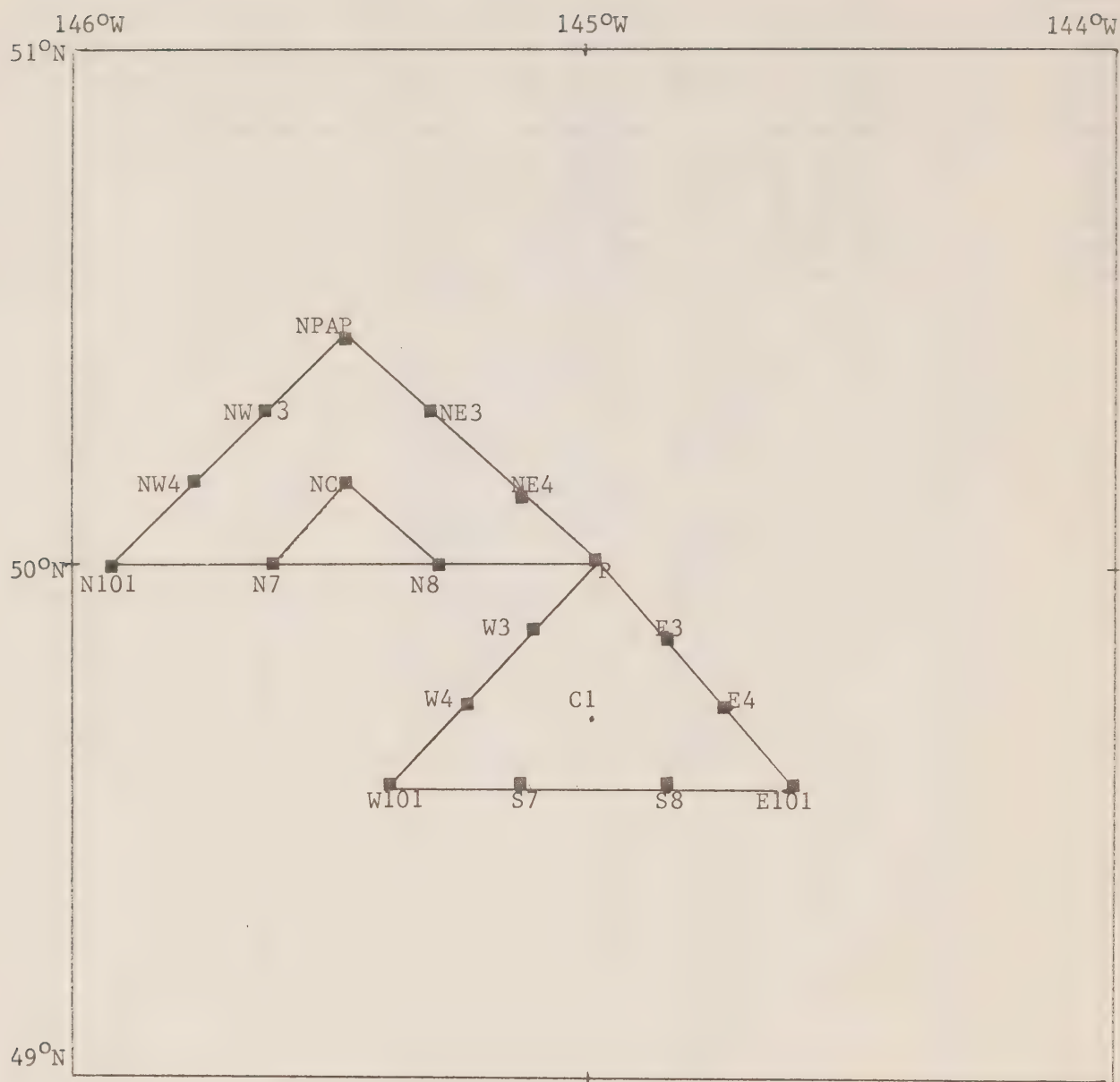
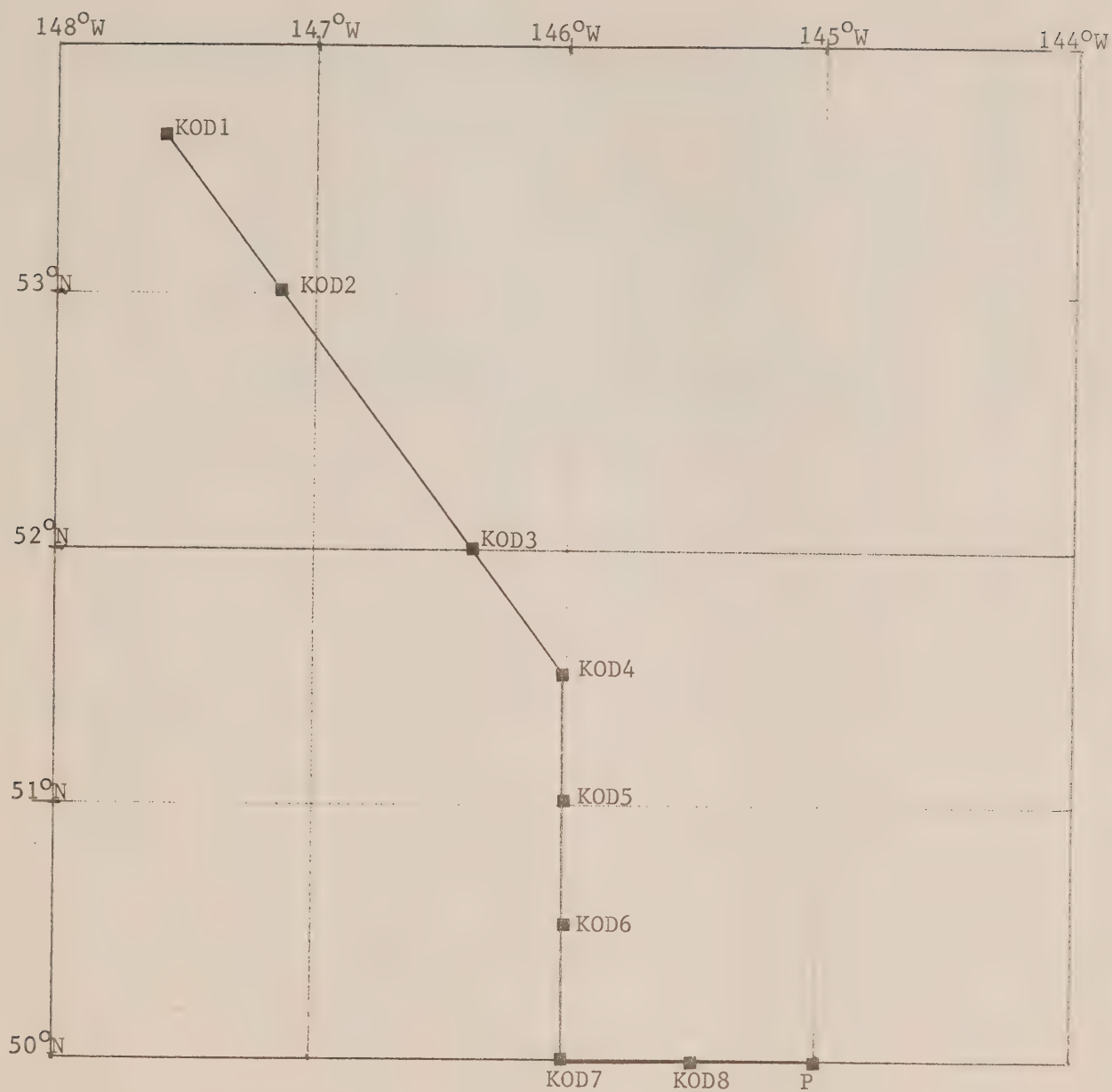


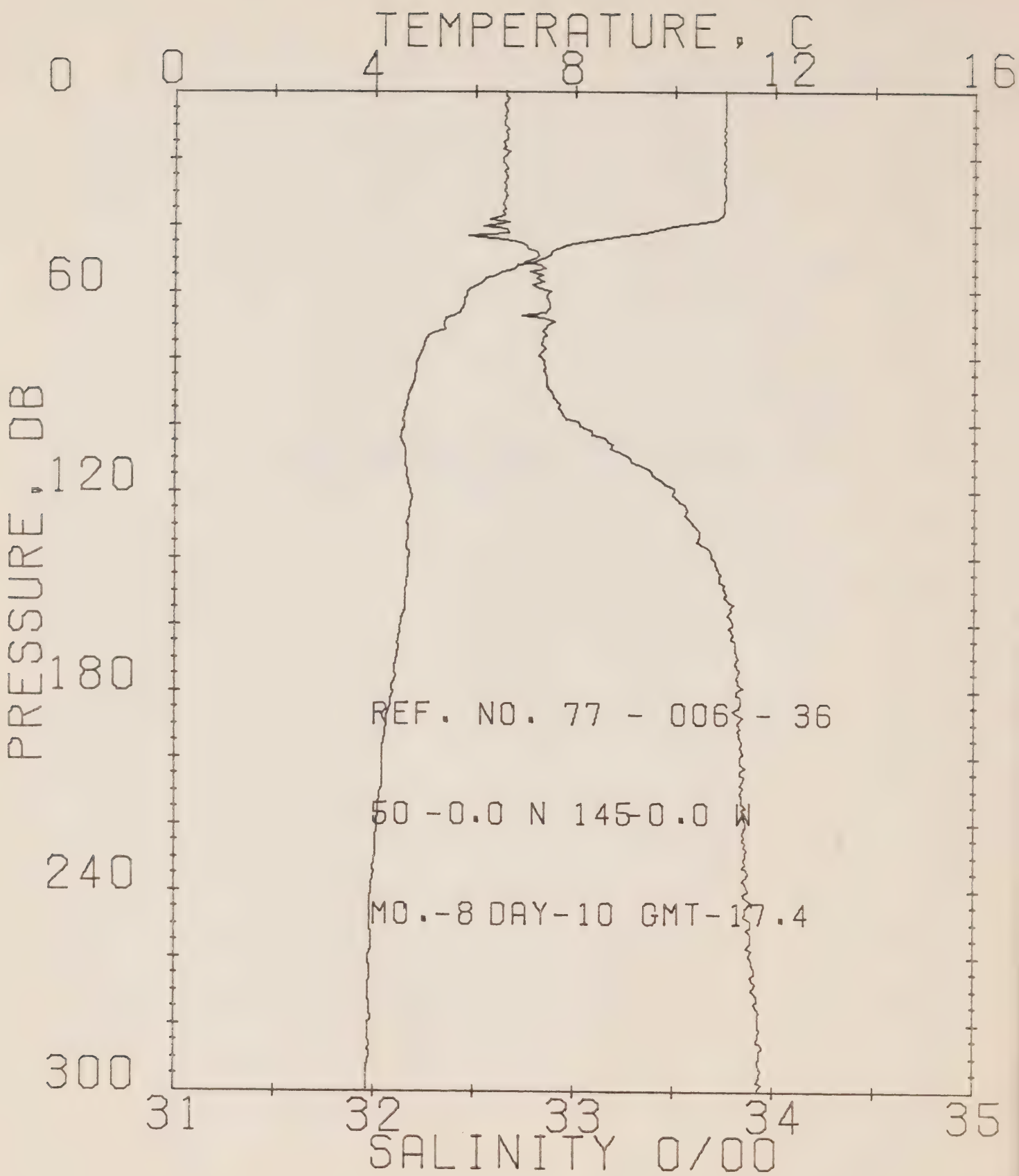
CHART SHOWING SUB STATIONS 'KOD'.







STD OBSERVATIONS OBTAINED ALONG MILE GRIDS



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6- 36

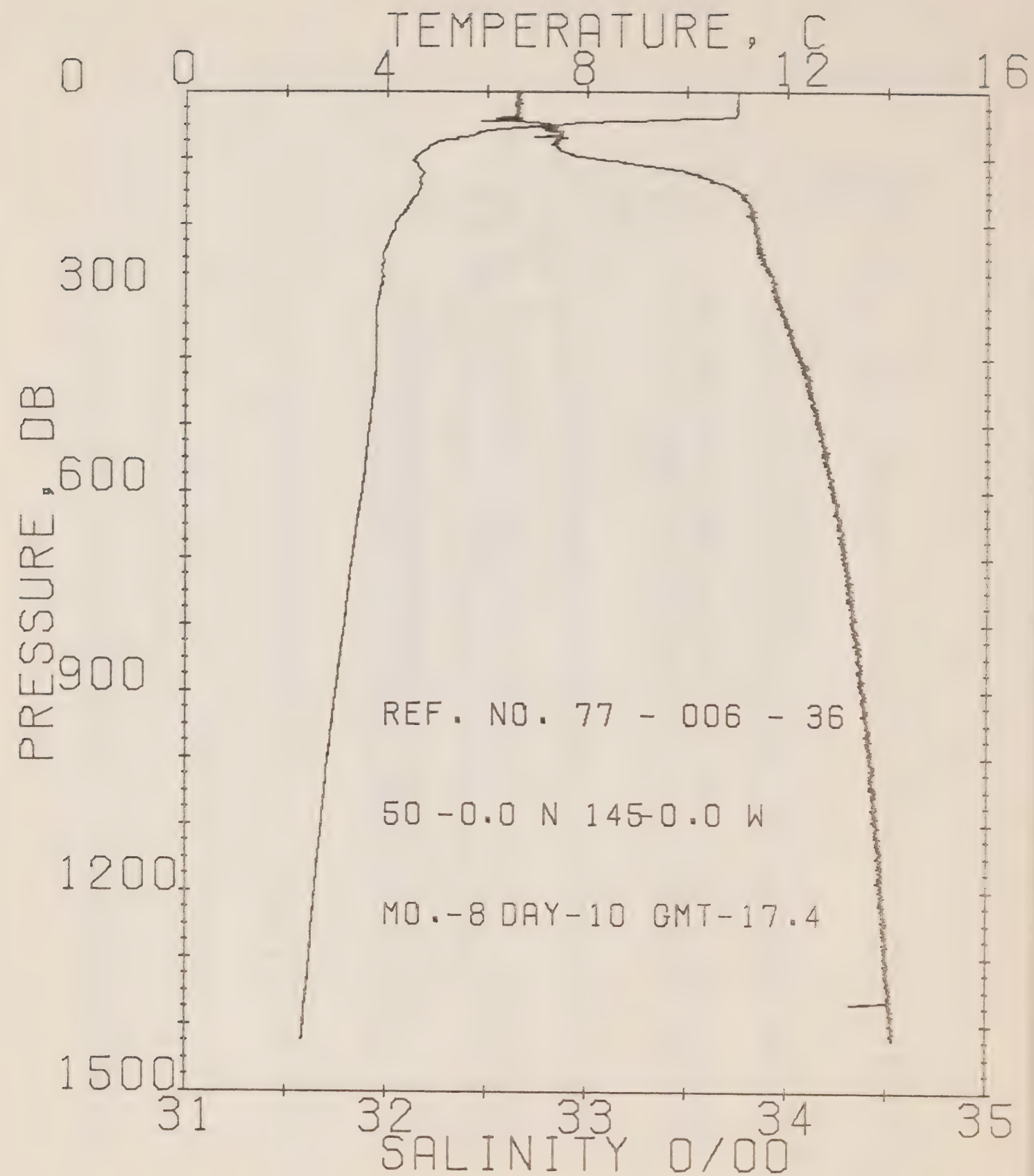
DATE 10/ 8/77

POSITION 50- .0N, 145- .0W

GMT 17.4

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	11.01	32.66	0	24.97	299.2	.00	.00	1491.
5	11.01	32.65	5	24.97	299.5	.15	.00	1491.
10	11.01	32.64	10	24.96	300.2	.30	.02	1491.
15	11.00	32.64	15	24.96	300.4	.45	.03	1491.
20	11.00	32.64	20	24.96	300.5	.60	.06	1491.
25	11.00	32.66	25	24.98	299.1	.75	.10	1491.
30	11.01	32.64	30	24.96	300.6	.90	.14	1491.
35	10.99	32.65	35	24.97	299.8	1.05	.19	1492.
40	10.08	32.56	40	25.06	291.6	1.20	.24	1488.
45	8.18	32.71	45	25.48	252.0	1.34	.30	1481.
50	7.36	32.81	50	25.67	233.7	1.46	.36	1478.
55	6.40	32.84	55	25.82	219.3	1.57	.42	1475.
60	5.85	32.88	60	25.92	210.0	1.68	.49	1473.
65	5.74	32.87	65	25.93	209.1	1.78	.55	1472.
70	5.39	32.87	70	25.97	205.3	1.89	.63	1471.
75	4.99	32.84	75	25.99	203.1	1.99	.70	1469.
80	4.86	32.84	80	26.00	202.2	2.09	.78	1469.
90	4.70	32.86	89	26.05	197.2	2.29	.95	1468.
100	4.59	33.03	99	26.18	185.2	2.48	1.14	1468.
110	4.62	33.27	109	26.37	167.5	2.66	1.33	1469.
120	4.73	33.50	119	26.54	151.2	2.82	1.51	1470.
130	4.67	33.60	129	26.62	143.6	2.97	1.70	1470.
140	4.67	33.68	139	26.69	137.1	3.11	1.90	1470.
150	4.62	33.75	149	26.75	131.7	3.24	2.09	1470.
160	4.51	33.79	159	26.80	127.5	3.37	2.30	1470.
170	4.44	33.82	169	26.82	125.0	3.50	2.51	1470.
180	4.36	33.82	179	26.83	124.2	3.62	2.73	1470.
190	4.24	33.82	189	26.85	122.7	3.74	2.97	1469.
200	4.16	33.84	199	26.87	120.9	3.87	3.21	1469.
210	4.12	33.84	209	26.88	120.1	3.99	3.46	1469.
220	4.06	33.86	218	26.89	118.5	4.11	3.72	1469.
230	4.01	33.86	228	26.90	118.0	4.22	3.99	1469.
240	3.94	33.87	238	26.92	116.4	4.34	4.27	1469.
250	3.93	33.89	248	26.93	115.0	4.46	4.55	1469.
260	3.90	33.88	258	26.93	115.8	4.57	4.86	1469.
270	3.90	33.89	268	26.94	114.6	4.69	5.17	1469.
280	3.90	33.93	278	26.96	112.3	4.80	5.49	1470.
290	3.90	33.93	288	26.97	112.0	4.91	5.81	1470.
300	3.86	33.95	298	26.98	111.3	5.02	6.15	1470.





## OFFSHORE OCEANOGRAPHY GROUP

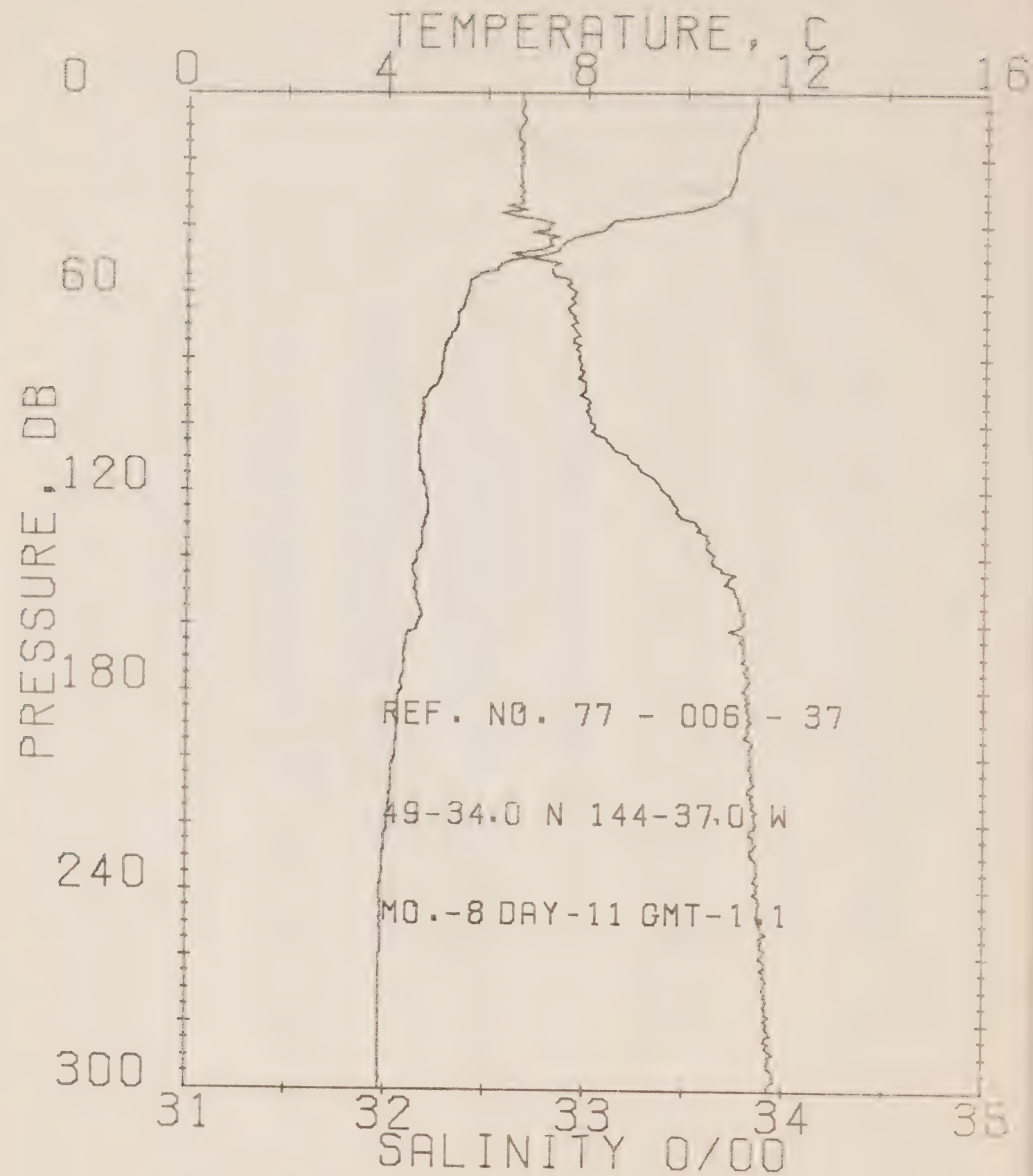
REFERENCE NO. 77- 8- 36

DATE 10/ 8/77

POSITION 30- .0N, 145- .0W

GMT 17.4

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	11.01	32.80	0	24.97	299.2	.00	.00	1471.
50	7.58	32.81	50	25.67	233.7	1.46	.50	1478.
100	4.59	33.03	99	26.10	185.2	2.42	1.14	1488.
150	4.52	33.75	149	26.75	131.7	3.24	2.09	1470.
200	4.10	33.84	199	26.37	120.9	3.87	3.21	1469.
250	3.93	33.89	248	26.93	115.0	4.46	4.50	1469.
300	3.88	33.93	296	26.93	111.3	5.02	6.13	1470.
350	3.60	34.01	347	27.04	105.8	5.57	7.50	1470.
400	3.78	34.00	397	27.06	102.1	6.09	9.93	1471.
450	3.74	34.12	446	27.14	97.1	6.52	12.09	1472.
500	3.56	34.10	496	27.17	94.2	7.06	14.41	1472.
550	3.59	34.20	545	27.21	90.7	7.53	16.86	1473.
600	3.51	34.22	595	27.24	88.5	7.97	19.30	1474.
650	3.40	34.20	644	27.28	85.2	8.41	22.20	1474.
700	3.31	34.29	694	27.31	82.2	8.82	25.12	1474.
750	3.23	34.30	743	27.33	80.8	9.23	28.11	1475.
800	3.16	34.34	793	27.36	77.9	9.62	31.22	1476.
850	3.07	34.30	842	27.39	75.2	10.00	34.40	1476.
900	3.00	34.30	891	27.41	73.6	10.37	37.75	1476.
950	2.91	34.41	941	27.44	70.9	10.74	41.15	1477.
1000	2.83	34.41	990	27.46	69.6	11.09	44.64	1477.
1050	2.77	34.44	1040	27.48	67.6	11.43	48.20	1478.
1100	2.71	34.45	1089	27.49	66.4	11.77	51.91	1479.
1150	2.64	34.47	1138	27.51	64.6	12.09	55.67	1479.
1200	2.58	34.47	1188	27.52	64.0	12.41	59.50	1480.
1250	2.52	34.50	1237	27.53	61.5	12.73	63.40	1480.
1300	2.48	34.49	1286	27.54	62.3	13.04	67.44	1481.
1350	2.41	34.52	1336	27.56	59.2	13.34	71.50	1482.
1400	2.35	34.53	1385	27.59	58.1	13.64	75.60	1482.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6- 37

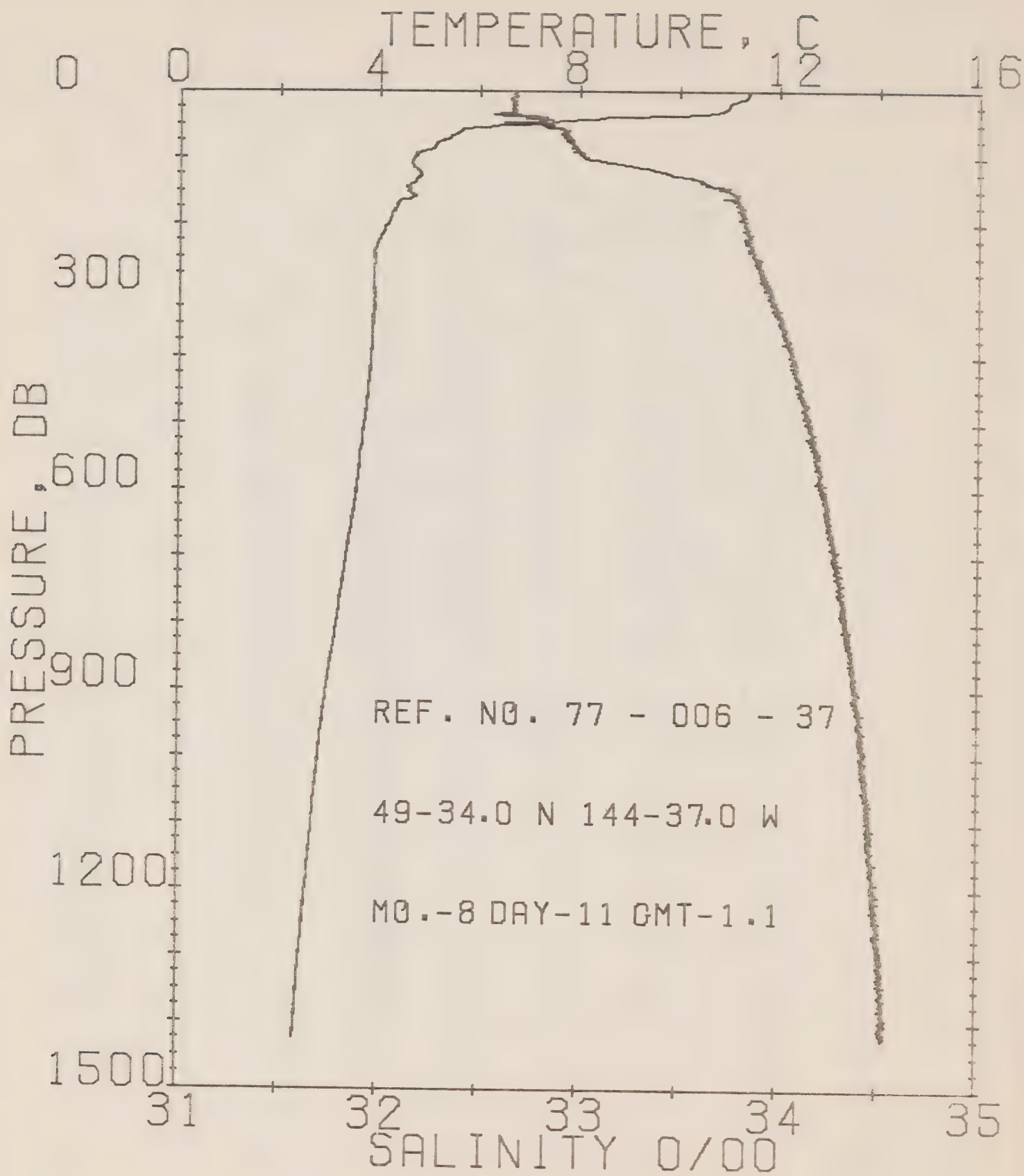
DATE 11/ 8/77

POSITION 49-34.0N, 144-37.0W

GMI 1.1

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT.	SIGMA
0	11.37	32.67	0	24.92	304.2	.00	.00	1492.0
5	11.37	32.67	5	24.92	304.3	.15	.00	1492.0
10	11.33	32.67	10	24.93	303.7	.30	.00	1492.0
15	11.11	32.66	15	24.97	299.7	.45	.00	1492.0
20	10.98	32.67	20	24.99	298.1	.60	.00	1491.0
25	10.95	32.67	25	24.99	297.8	.75	.10	1491.0
30	10.82	32.68	30	25.03	294.8	.90	.14	1491.0
35	10.68	32.69	35	25.10	282.0	1.05	.19	1490.0
40	8.40	32.60	40	25.52	248.3	1.18	.24	1488.0
45	7.53	32.61	45	25.65	235.6	1.30	.29	1479.0
50	6.53	32.74	50	25.73	228.3	1.42	.34	1479.0
55	5.79	32.64	55	25.90	211.8	1.53	.40	1472.0
60	5.60	32.94	60	26.00	202.2	1.63	.46	1472.0
65	5.49	32.91	65	25.99	203.5	1.73	.52	1471.0
70	5.38	32.92	70	26.01	201.4	1.83	.58	1471.0
75	5.18	32.94	75	26.05	198.0	1.93	.64	1470.0
80	5.12	32.96	80	26.07	195.6	2.03	.70	1470.0
90	4.83	32.99	90	26.13	190.2	2.22	.87	1469.0
100	4.68	33.04	99	26.16	185.3	2.41	1.10	1469.0
110	4.67	33.21	109	26.32	172.7	2.50	1.27	1469.0
120	4.60	33.39	119	26.44	160.7	2.76	1.47	1470.0
130	4.75	33.55	129	26.58	147.9	2.91	1.60	1470.0
140	4.60	33.64	139	26.67	139.6	3.06	1.69	1470.0
150	4.60	33.75	149	26.75	131.8	3.19	2.00	1470.0
160	4.60	33.60	159	26.79	128.3	3.32	2.29	1470.0
170	4.37	33.60	169	26.82	125.7	3.45	2.50	1470.0
180	4.28	33.79	179	26.82	125.4	3.57	2.70	1469.0
190	4.22	33.82	189	26.85	122.5	3.70	2.93	1469.0
200	4.15	33.83	199	26.87	121.1	3.82	3.20	1469.0
210	4.09	33.82	209	26.86	121.5	3.94	3.49	1469.0
220	4.02	33.66	219	26.90	118.1	4.06	3.72	1469.0
230	3.94	33.64	229	26.89	118.6	4.19	3.99	1469.0
240	3.90	33.67	238	26.92	116.4	4.30	4.20	1469.0
250	3.91	33.66	248	26.95	115.8	4.41	4.50	1469.0
260	3.90	33.69	253	26.95	115.2	4.53	4.60	1469.0
270	3.89	33.90	260	26.95	113.7	4.64	5.10	1469.0
280	3.90	33.92	273	26.95	112.4	4.75	5.40	1470.0
290	3.90	33.93	280	26.97	111.9	4.87	5.60	1470.0
300	3.90	33.96	290	26.99	109.8	4.90	5.15	1470.0





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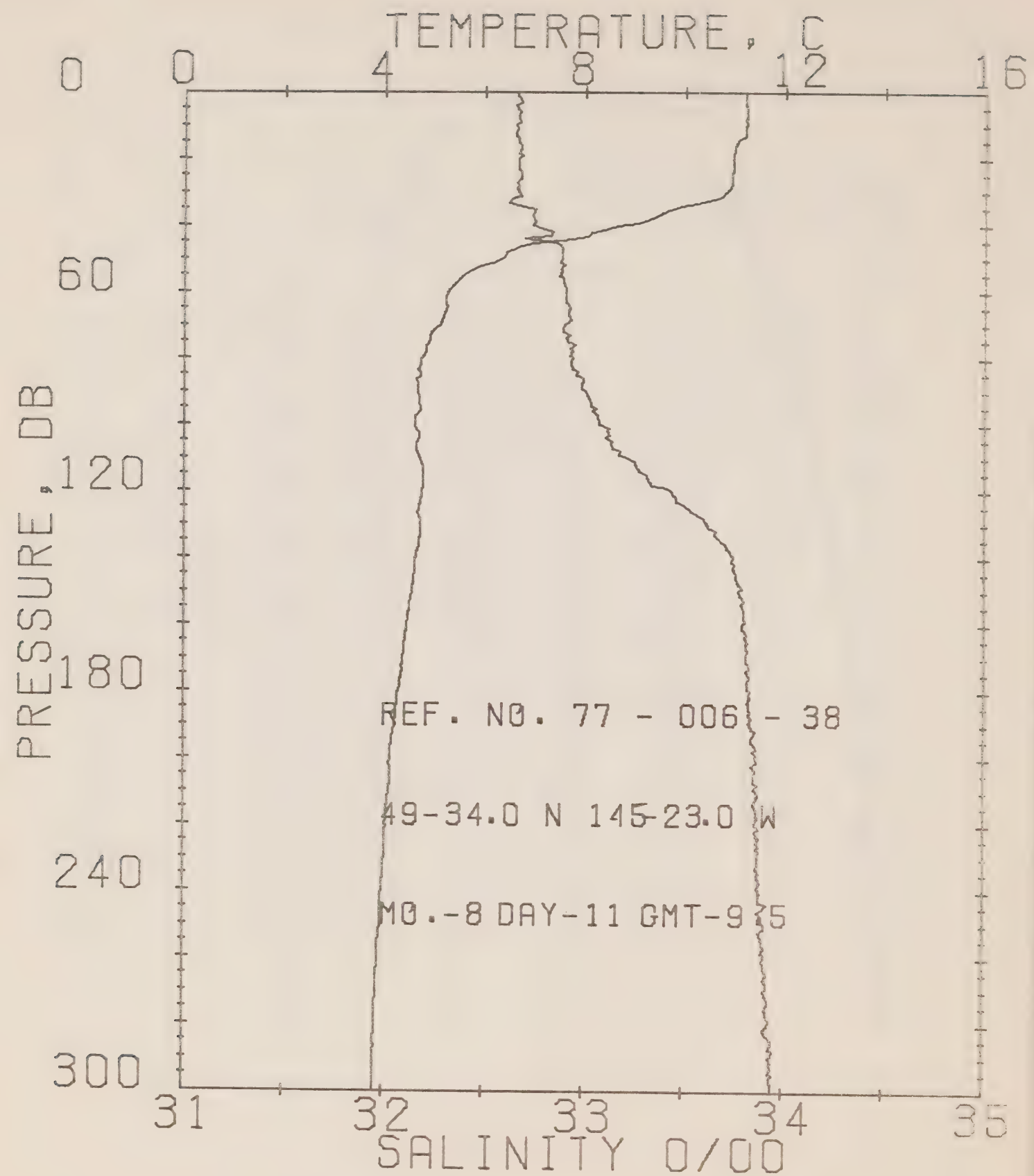
REFERENCE NO. 77- 8- 37

DATE 11/ 8/77

POSITION 49-34.0N, 144-37.0W

SMT 1.1

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	11.37	32.67	0	24.92	304.2	.00	.00	1492.
50	6.53	32.74	50	25.73	228.3	1.42	.35	1473.
100	4.68	33.04	99	26.16	185.3	2.41	1.10	1469.
150	4.30	33.75	149	26.75	131.8	3.10	2.00	1470.
200	4.15	33.65	199	26.57	121.1	3.82	3.20	1469.
250	3.91	33.86	248	26.95	115.8	4.41	4.55	1469.
300	3.90	33.96	298	26.99	109.8	4.98	6.14	1470.
350	3.88	34.01	347	27.03	106.7	5.52	7.95	1471.
400	3.84	34.06	397	27.06	102.9	6.04	9.92	1471.
450	3.78	34.11	446	27.15	98.4	6.54	12.09	1472.
500	3.70	34.16	496	27.17	94.6	7.02	14.44	1473.
550	3.63	34.21	545	27.22	90.4	7.49	16.95	1473.
600	3.56	34.23	595	27.24	88.5	7.94	19.56	1474.
650	3.47	34.26	644	27.26	85.4	8.39	22.37	1474.
700	3.36	34.28	694	27.30	83.3	8.80	25.27	1475.
750	3.26	34.32	743	27.34	79.5	9.21	28.20	1475.
800	3.17	34.34	793	27.36	77.8	9.60	31.40	1476.
850	3.06	34.37	842	27.40	74.5	9.99	34.66	1475.
900	2.97	34.38	892	27.42	73.0	10.35	37.86	1476.
950	2.89	34.40	941	27.44	71.1	10.71	41.24	1477.
1000	2.82	34.42	990	27.46	69.3	11.06	44.66	1477.
1050	2.75	34.45	1040	27.49	66.2	11.30	48.22	1478.
1100	2.69	34.47	1089	27.51	64.7	11.72	51.64	1479.
1150	2.64	34.47	1138	27.51	64.0	12.05	55.56	1479.
1200	2.57	34.49	1186	27.54	62.5	12.37	59.36	1480.
1250	2.51	34.50	1237	27.55	61.4	12.68	63.25	1483.
1300	2.46	34.52	1286	27.57	59.5	12.98	67.17	1481.
1350	2.41	34.53	1336	27.58	58.9	13.28	71.16	1482.
1400	2.36	34.55	1385	27.59	58.1	13.57	75.24	1482.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6- 38

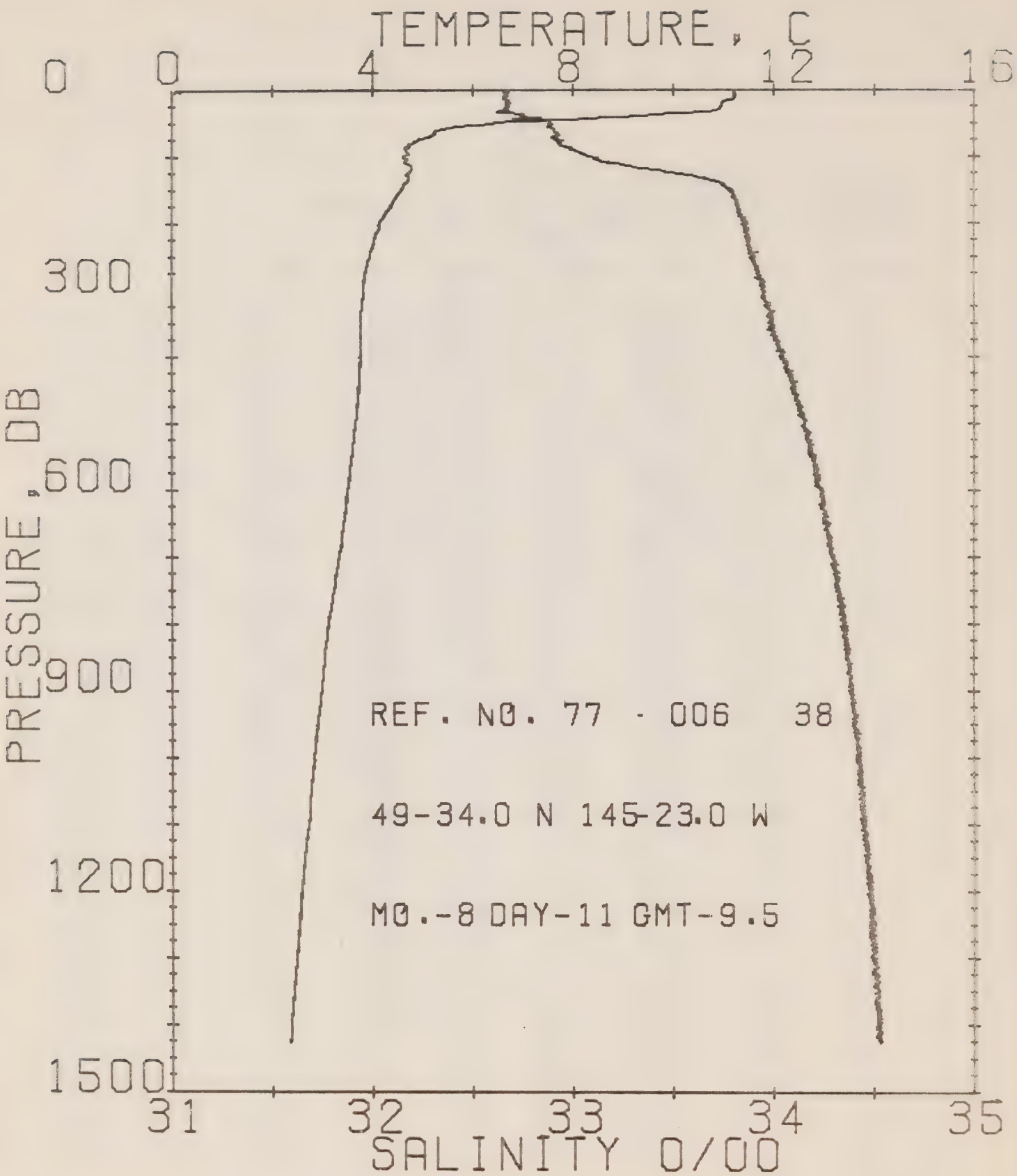
DATE 11/ 8/77

POSITION 49-34.0N, 145-23.0W

GMT 9.5

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	11.21	32.86	0	24.94	302.1	.00	.00	1492.
5	11.22	32.86	5	24.94	302.7	.15	.00	1492.
10	11.21	32.85	10	24.94	303.0	.30	.02	1492.
15	11.01	32.86	15	24.98	298.8	.45	.03	1491.
20	10.96	32.87	20	24.99	298.0	.60	.06	1491.
25	10.94	32.86	25	25.00	296.8	.75	.10	1491.
30	10.80	32.87	30	25.02	295.4	.90	.14	1491.
35	9.71	32.75	35	25.27	272.0	1.04	.16	1487.
40	8.86	32.74	40	25.43	256.6	1.18	.24	1483.
45	7.07	32.83	45	25.75	228.2	1.30	.29	1477.
50	6.33	32.88	50	25.87	215.1	1.41	.34	1474.
55	5.57	32.87	55	25.95	206.8	1.51	.40	1471.
60	5.25	32.91	60	26.01	201.0	1.61	.46	1470.
65	5.22	32.93	65	26.03	199.1	1.71	.52	1470.
70	5.09	32.90	70	26.03	199.6	1.81	.59	1470.
75	4.87	32.92	75	26.07	196.1	1.91	.66	1469.
80	4.72	32.94	80	26.10	193.0	2.01	.74	1468.
90	4.67	33.00	89	26.15	187.8	2.20	.90	1468.
100	4.62	33.07	99	26.22	182.0	2.30	1.06	1468.
110	4.72	33.21	109	26.31	172.9	2.56	1.27	1469.
120	4.75	33.43	119	26.49	156.5	2.77	1.47	1470.
130	4.73	33.61	129	26.63	142.9	2.88	1.66	1470.
140	4.62	33.75	139	26.75	131.7	3.02	1.85	1470.
150	4.56	33.76	149	26.76	129.1	3.15	2.04	1470.
160	4.47	33.80	159	26.80	126.8	3.27	2.24	1470.
170	4.37	33.82	169	26.83	124.4	3.40	2.45	1470.
180	4.28	33.83	179	26.85	122.2	3.52	2.67	1469.
190	4.20	33.83	189	26.86	121.7	3.65	2.90	1469.
200	4.12	33.86	199	26.89	118.9	3.76	3.14	1469.
210	4.10	33.86	209	26.90	116.3	3.88	3.39	1469.
220	4.04	33.86	216	26.90	117.9	4.00	3.65	1469.
230	4.01	33.87	226	26.91	116.9	4.12	3.92	1469.
240	3.96	33.86	236	26.92	115.8	4.24	4.20	1469.
250	3.93	33.91	246	26.95	113.6	4.35	4.48	1469.
260	3.89	33.91	256	26.95	113.6	4.46	4.75	1469.
270	3.86	33.91	266	26.95	113.2	4.58	5.09	1469.
280	3.83	33.93	276	26.97	111.3	4.69	5.40	1469.
290	3.82	33.94	286	26.96	110.8	4.80	5.72	1469.
300	3.82	33.94	296	26.99	110.3	4.91	6.06	1470.





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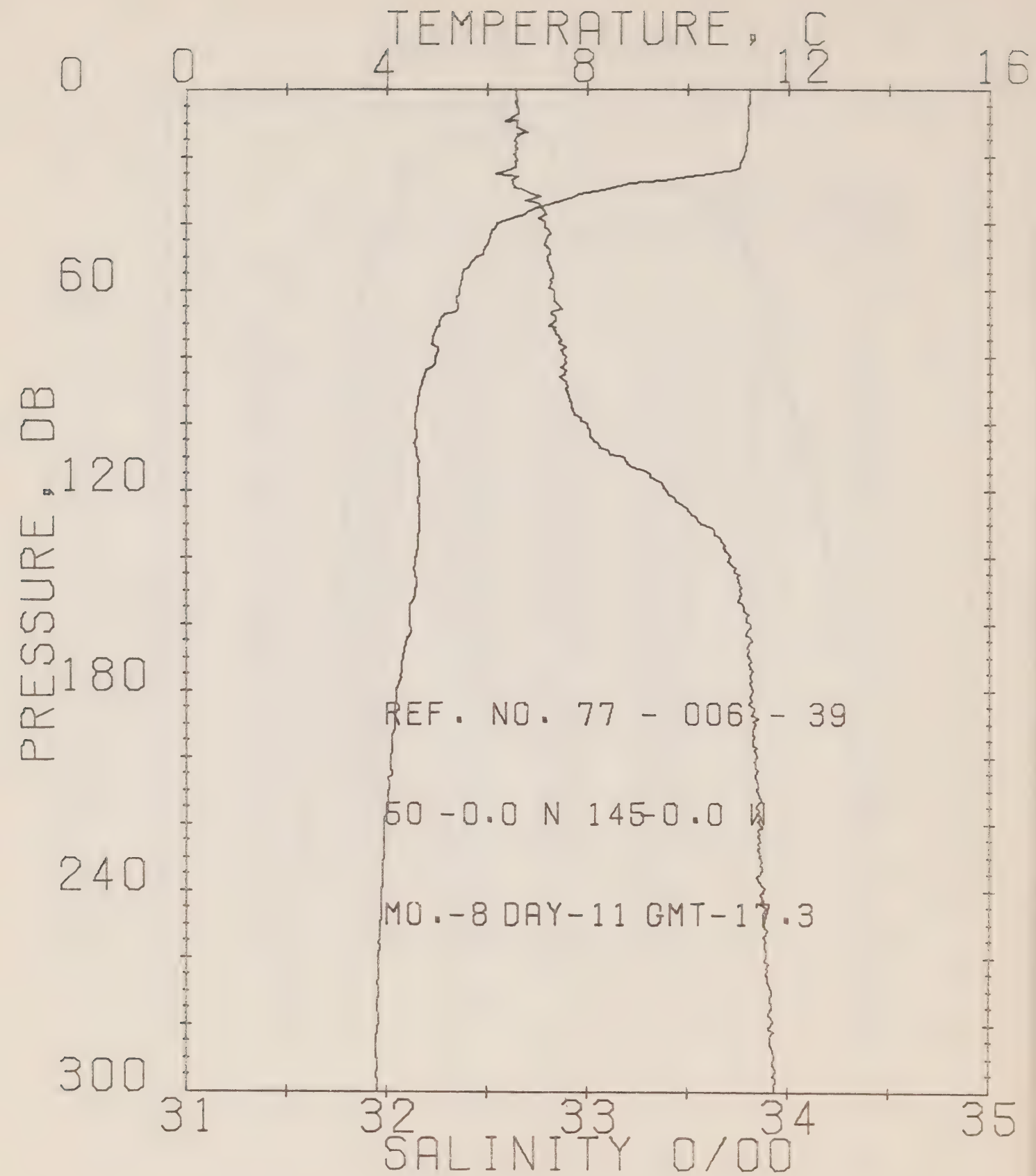
REFERENCE NO. 77- 6- 38

DATE 11/ 8/77

POSITION 49-34.0N, 145-23.0W

GMT 9.5

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA J	POT. EN	STANDARD
0	11.21	32.88	0	24.94	302.1	.00	.00	1492.
50	8.53	32.88	50	25.37	215.1	1.41	.34	1474.
100	4.82	33.07	99	26.22	182.0	2.30	1.88	1468.
150	4.56	33.78	149	26.78	129.1	3.15	2.04	1470.
200	4.12	33.88	199	26.89	118.9	3.74	3.14	1469.
250	3.93	33.91	248	26.95	113.8	4.35	4.48	1469.
300	3.82	33.94	298	26.99	110.3	4.91	5.05	1470.
350	3.76	33.98	347	27.02	107.2	5.45	7.85	1470.
400	3.75	34.03	397	27.06	103.9	5.98	9.88	1471.
450	3.72	34.11	446	27.13	98.1	6.49	12.85	1472.
500	3.65	34.18	496	27.17	94.3	6.96	14.57	1472.
550	3.58	34.18	545	27.20	91.7	7.43	16.86	1473.
600	3.49	34.24	595	27.25	87.2	7.88	19.48	1473.
650	3.42	34.28	644	27.29	83.6	8.31	22.25	1474.
700	3.33	34.29	694	27.31	82.5	8.73	25.11	1474.
750	3.22	34.32	743	27.35	79.2	9.13	28.08	1475.
800	3.11	34.34	793	27.37	76.7	9.51	31.14	1475.
850	3.04	34.36	842	27.39	75.0	9.89	34.31	1476.
900	2.98	34.38	892	27.41	73.3	10.26	37.58	1476.
950	2.90	34.41	941	27.44	70.7	10.62	40.96	1477.
1000	2.83	34.42	990	27.46	69.3	10.97	44.42	1478.
1050	2.77	34.44	1040	27.48	67.6	11.31	47.98	1478.
1100	2.72	34.46	1089	27.50	66.0	11.64	51.65	1479.
1150	2.64	34.47	1138	27.52	64.4	11.97	55.35	1479.
1200	2.58	34.49	1188	27.55	62.9	12.29	59.22	1480.
1250	2.53	34.50	1237	27.55	61.4	12.61	63.18	1480.
1300	2.48	34.51	1286	27.56	60.3	12.91	67.21	1481.
1350	2.42	34.52	1336	27.58	59.3	13.21	71.15	1482.
1400	2.38	34.52	1385	27.58	59.2	13.52	75.32	1482.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8- 39

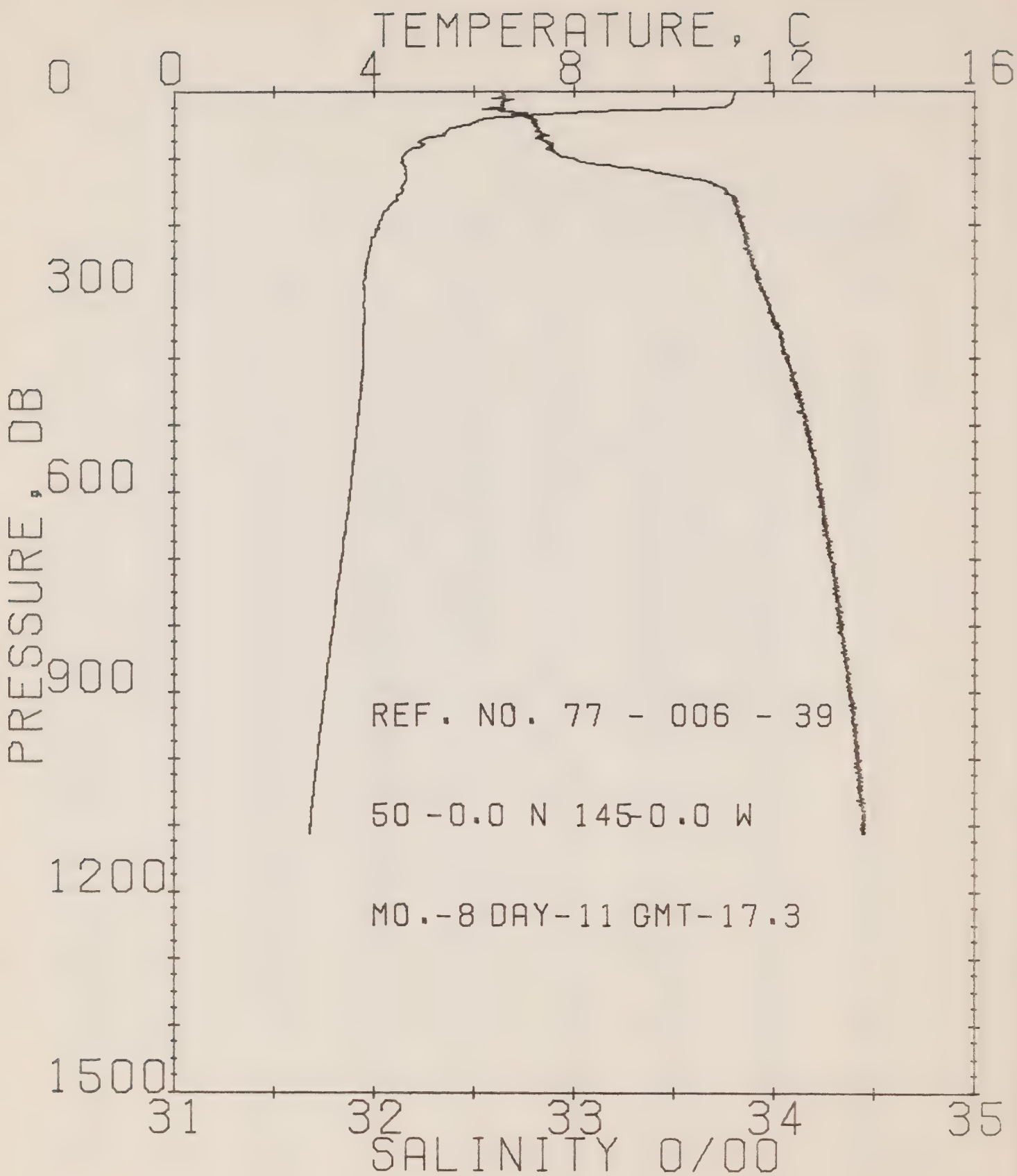
DATE 11/ 8/77

POSITION 50- 00N, 145- 00W

GMT 17.3

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT.	SOUND
0	11.22	32.84	0	24.92	304.1	.00	.00	1492.
5	11.21	32.84	5	24.93	303.7	.15	.00	1492.
10	11.19	32.85	10	24.94	302.9	.30	.00	1492.
15	11.17	32.84	15	24.93	303.6	.46	.00	1492.
20	11.11	32.84	20	24.94	302.7	.61	.00	1492.
25	10.47	32.85	25	24.98	298.8	.76	.10	1489.
30	8.30	32.88	30	25.43	256.1	.89	.10	1482.
35	7.01	32.77	35	25.66	232.0	1.02	.17	1477.
40	6.21	32.79	40	25.80	220.8	1.13	.22	1474.
45	5.83	32.79	45	25.83	218.1	1.24	.27	1473.
50	5.77	32.80	50	25.87	214.6	1.35	.32	1472.
55	5.50	32.83	55	25.92	209.5	1.45	.37	1471.
60	5.45	32.83	60	25.93	208.7	1.56	.44	1471.
65	5.40	32.86	65	25.96	205.9	1.66	.50	1471.
70	5.03	32.82	70	25.97	205.1	1.76	.57	1469.
75	4.92	32.87	75	26.02	200.5	1.87	.63	1469.
80	4.97	32.89	80	26.03	199.2	1.97	.70	1469.
90	4.64	32.89	89	26.07	195.7	2.16	.90	1465.
100	4.50	33.00	99	26.10	187.3	2.36	1.00	1465.
110	4.62	33.10	109	26.30	174.3	2.50	1.20	1469.
120	4.64	33.39	119	26.47	156.4	2.71	1.40	1469.
130	4.65	33.37	129	26.60	145.7	2.86	1.60	1470.
140	4.57	33.71	139	26.73	133.9	3.00	1.80	1473.
150	4.56	33.76	149	26.77	130.1	3.13	2.00	1473.
160	4.45	33.81	159	26.82	125.0	3.26	2.20	1473.
170	4.52	33.81	169	26.83	124.4	3.38	2.47	1469.
180	4.19	33.82	179	26.86	121.9	3.50	2.60	1469.
190	4.15	33.84	189	26.87	120.6	3.63	2.92	1469.
200	4.09	33.85	199	26.88	119.5	3.75	3.10	1469.
210	4.03	33.85	208	26.89	118.8	3.87	3.41	1469.
220	3.95	33.86	218	26.91	117.2	3.99	3.60	1469.
230	3.94	33.86	228	26.91	117.4	4.10	3.90	1469.
240	3.90	33.86	238	26.93	115.3	4.22	4.21	1469.
250	3.87	33.86	248	26.93	115.3	4.33	4.50	1469.
260	3.84	33.89	258	26.94	113.9	4.45	4.80	1469.
270	3.84	33.92	268	26.97	112.1	4.56	5.10	1469.
280	3.82	33.92	278	26.97	112.1	4.67	5.42	1469.
290	3.81	33.93	288	26.98	110.7	4.78	5.74	1469.
300	3.81	33.95	298	26.99	109.7	4.89	6.07	1470.





## OFFSHORE OCEANOGRAPHY GROUP

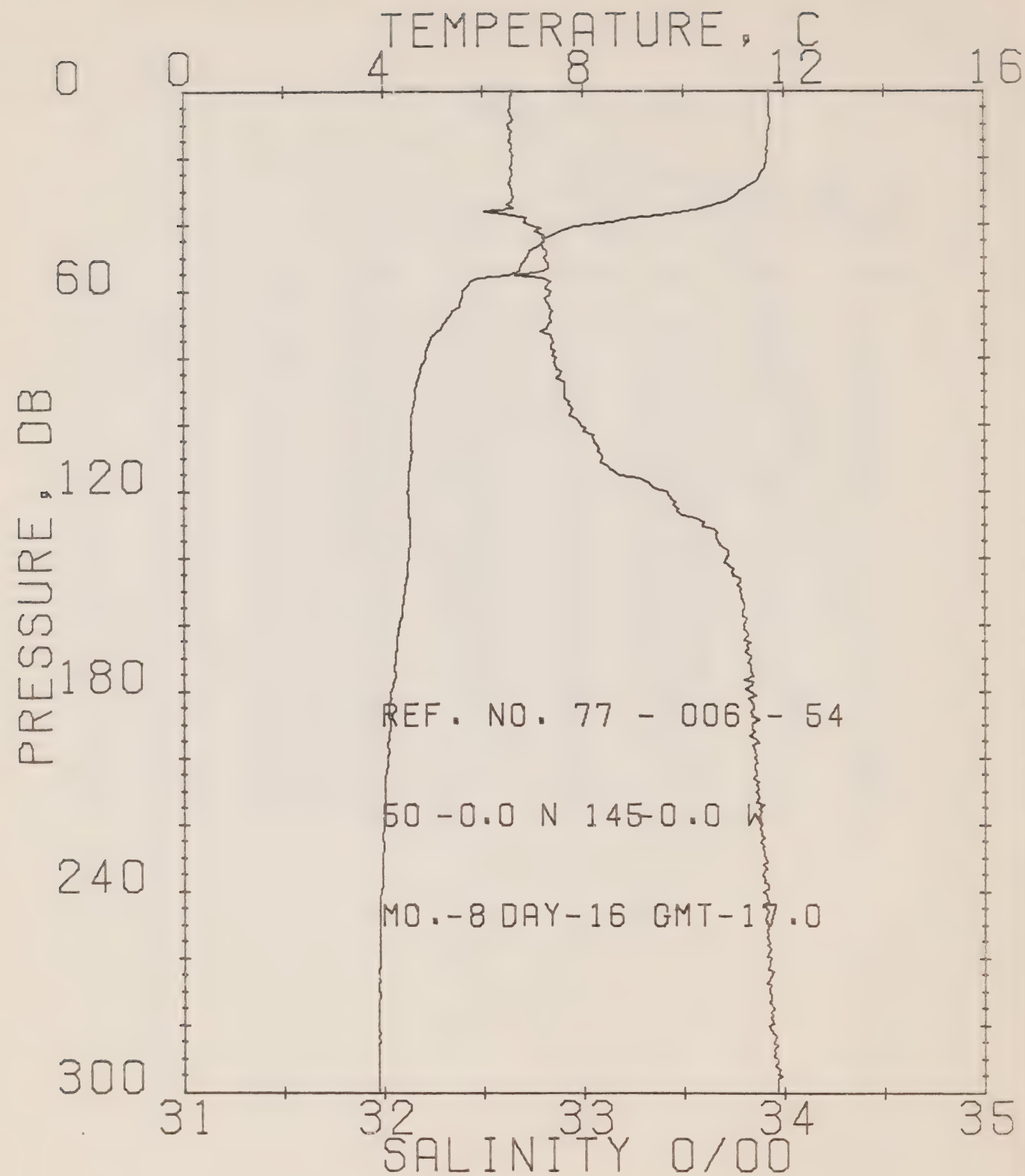
REFERENCE NO. 77- 6- 39

DATE 11/ 8/77

POSITION 50- .0N, 145- .0W

GMT 17.3

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	11.22	32.64	0	24.92	304.1	.00	.00	1492.
50	5.77	32.60	50	25.87	214.0	1.35	.32	1472.
100	4.56	33.00	99	26.16	187.3	2.36	1.06	1466.
150	4.56	33.76	149	26.77	130.1	3.13	2.05	1470.
200	4.09	33.65	199	26.88	119.5	3.75	3.16	1469.
250	3.67	33.66	248	26.93	115.3	4.33	4.50	1469.
300	3.61	33.95	293	26.99	109.7	4.80	6.07	1470.
350	3.79	34.01	347	27.05	105.2	5.43	7.80	1470.
400	3.78	34.67	397	27.09	101.0	5.95	9.64	1471.
450	3.74	34.13	446	27.14	97.0	6.45	12.00	1472.
500	3.67	34.15	496	27.16	95.0	6.93	14.32	1472.
550	3.59	34.20	545	27.21	91.0	7.39	16.66	1473.
600	3.52	34.23	595	27.24	88.0	7.84	19.40	1474.
650	3.44	34.26	644	27.26	85.1	8.28	22.21	1474.
700	3.56	34.28	694	27.30	83.3	8.70	25.11	1475.
750	3.27	34.31	743	27.33	80.6	9.11	26.10	1475.
800	3.19	34.34	793	27.36	78.2	9.51	31.27	1476.
850	3.09	34.37	842	27.39	75.0	9.89	34.51	1475.
900	3.02	34.39	891	27.42	73.2	10.27	37.85	1477.
950	2.94	34.40	941	27.44	71.5	10.63	41.26	1477.
1000	2.67	34.42	990	27.46	69.6	10.99	44.80	1478.
1050	2.79	34.43	1040	27.47	68.5	11.33	46.41	1478.
1100	2.72	34.45	1089	27.50	66.2	11.67	52.11	1479.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6- 54

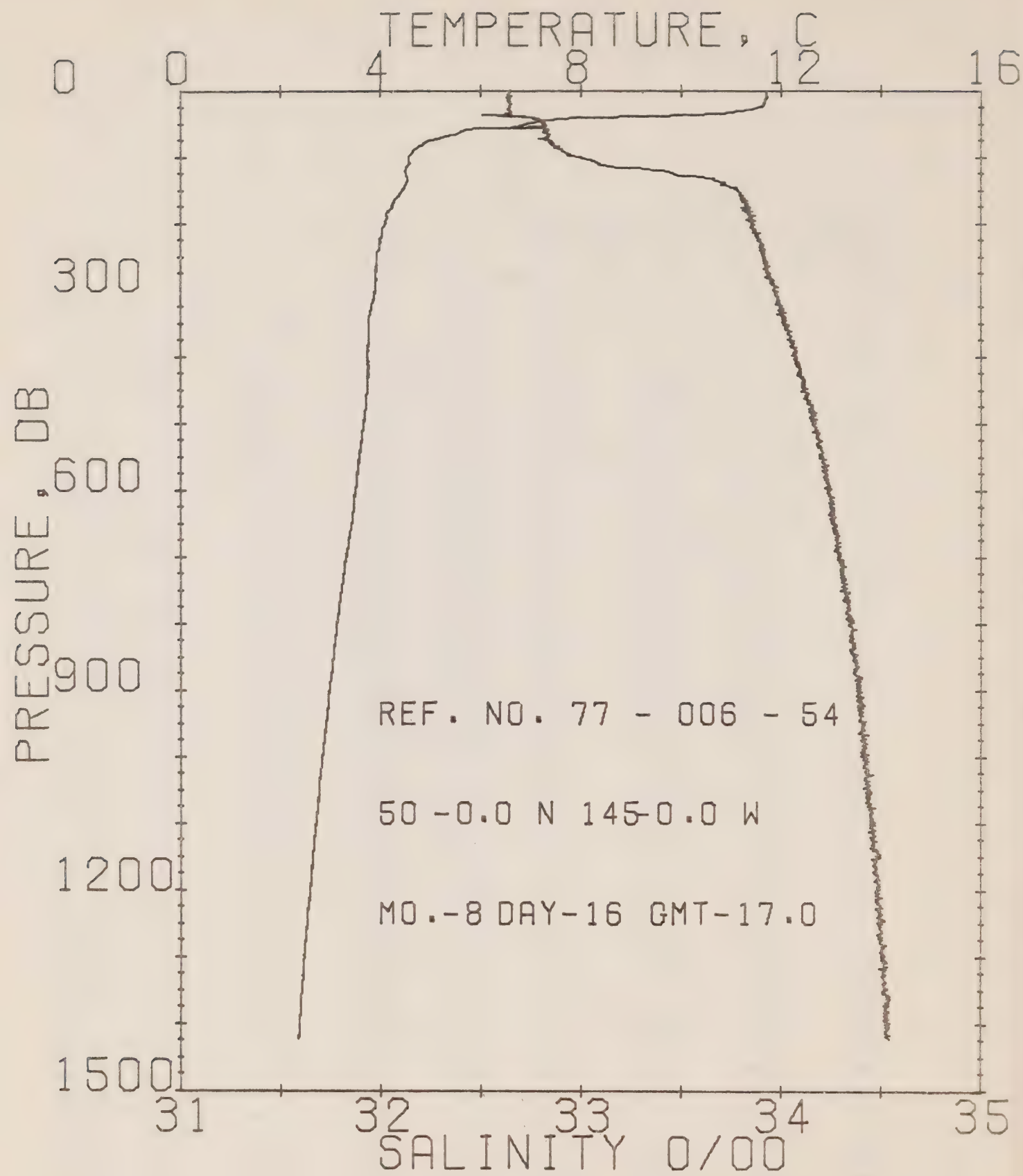
DATE 16/ 8/77

POSITION 50- .0N, 145- .0W

GMT 17.0

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	11.72	32.65	0	24.84	312.1	.00	.00	1494.
5	11.71	32.64	5	24.83	312.7	.16	.00	1494.
10	11.72	32.63	10	24.83	313.5	.31	.02	1494.
15	11.68	32.63	15	24.84	312.6	.47	.04	1494.
20	11.66	32.64	20	24.85	311.6	.62	.06	1494.
25	11.53	32.65	25	24.87	309.1	.78	.10	1493.
30	11.14	32.65	30	24.94	302.8	.93	.14	1492.
35	10.38	32.65	35	25.08	290.0	1.08	.19	1489.
40	8.01	32.74	40	25.52	247.7	1.22	.24	1481.
45	7.21	32.61	45	25.69	231.9	1.34	.29	1473.
50	6.68	32.61	50	25.73	227.4	1.45	.35	1476.
55	6.55	32.69	55	25.69	232.1	1.56	.41	1475.
60	5.62	32.64	60	25.92	210.2	1.67	.47	1472.
65	5.49	32.84	65	25.93	209.0	1.78	.54	1471.
70	5.21	32.83	70	25.96	206.3	1.88	.61	1470.
75	4.92	32.85	75	26.01	201.6	1.98	.69	1469.
80	4.85	32.85	80	26.03	199.9	2.09	.77	1469.
90	4.64	32.91	89	26.08	194.6	2.28	.94	1468.
100	4.56	32.99	99	26.13	187.7	2.47	1.12	1468.
110	4.55	33.09	109	26.24	179.8	2.66	1.32	1468.
120	4.48	33.41	119	26.50	155.2	2.83	1.52	1469.
130	4.53	33.60	129	26.64	142.1	2.98	1.71	1469.
140	4.50	33.72	139	26.74	132.9	3.11	1.90	1469.
150	4.42	33.78	149	26.80	127.2	3.24	2.09	1469.
160	4.33	33.80	159	26.82	124.8	3.37	2.29	1469.
170	4.24	33.84	169	26.86	121.6	3.49	2.50	1469.
180	4.14	33.84	179	26.87	120.6	3.61	2.71	1469.
190	4.14	33.84	189	26.87	120.2	3.73	2.94	1469.
200	4.09	33.86	199	26.89	118.8	3.85	3.16	1469.
210	4.03	33.86	209	26.90	117.3	3.97	3.42	1469.
220	4.00	33.89	218	26.92	115.7	4.09	3.66	1469.
230	3.97	33.91	228	26.94	114.0	4.20	3.94	1469.
240	3.94	33.90	238	26.94	114.3	4.32	4.22	1469.
250	3.92	33.92	248	26.96	112.7	4.43	4.50	1469.
260	3.91	33.93	258	26.97	111.9	4.50	4.79	1469.
270	3.91	33.93	268	26.96	112.2	4.66	5.09	1469.
280	3.91	33.93	278	26.96	112.4	4.77	5.41	1470.
290	3.90	33.97	288	27.00	109.4	4.88	5.70	1470.
300	3.89	33.96	298	26.99	109.7	4.99	6.00	1470.





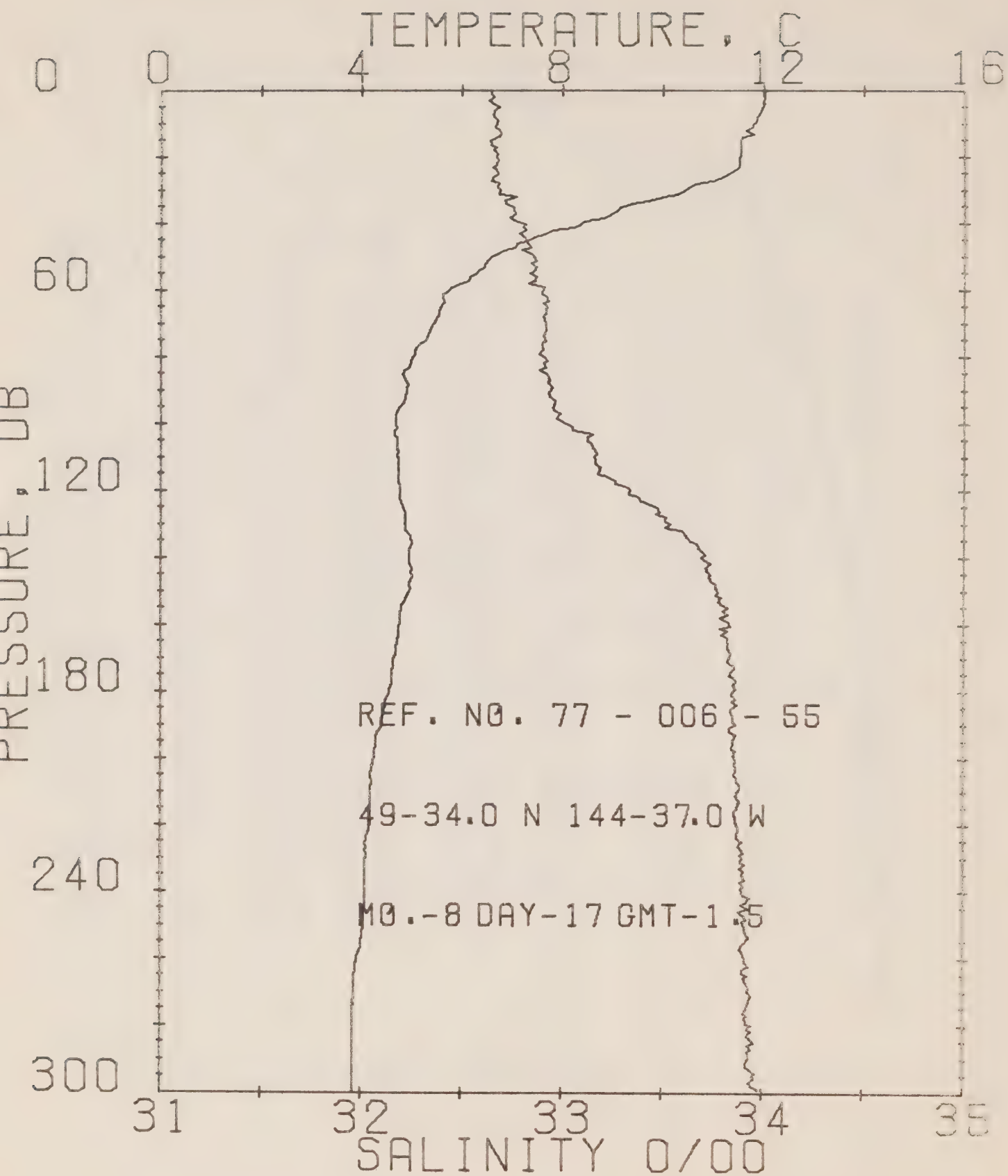
## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6- 54

DATE 16/ 8/77

POSITION 50- .0N, 145- .0W GMT 17.0

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	11.72	32.85	0	24.84	312.1	.00	.00	1494.
50	8.88	32.81	50	25.73	227.4	1.45	.35	1478.
100	4.56	32.99	99	26.15	187.7	2.47	1.12	1468.
150	4.42	33.78	149	26.30	127.2	3.24	2.09	1469.
200	4.09	33.88	199	26.39	118.8	3.85	3.18	1469.
250	3.92	33.92	243	26.96	112.7	4.43	4.50	1469.
300	3.89	33.96	290	26.99	109.7	4.99	6.00	1470.
350	3.76	34.01	347	27.05	104.7	5.52	7.82	1470.
400	3.75	34.07	397	27.10	100.6	6.03	9.77	1471.
450	3.73	34.12	440	27.14	97.4	6.52	11.91	1472.
500	3.66	34.17	490	27.19	93.0	7.00	14.21	1472.
550	3.58	34.20	543	27.21	90.5	7.46	16.86	1473.
600	3.49	34.24	593	27.26	86.8	7.90	19.25	1473.
650	3.42	34.27	644	27.29	84.5	8.33	21.90	1474.
700	3.31	34.29	694	27.31	82.1	8.74	24.84	1474.
750	3.22	34.32	743	27.34	79.5	9.15	27.81	1475.
800	3.13	34.34	793	27.37	76.8	9.53	30.87	1475.
850	3.06	34.37	842	27.40	74.3	9.91	34.04	1476.
900	2.97	34.38	891	27.42	72.9	10.28	37.31	1476.
950	2.90	34.42	941	27.45	69.7	10.63	40.89	1477.
1000	2.83	34.42	990	27.48	69.1	10.98	44.10	1477.
1050	2.78	34.44	1040	27.48	67.7	11.33	47.73	1478.
1100	2.70	34.46	1089	27.51	65.3	11.66	51.39	1479.
1150	2.64	34.49	1138	27.54	62.5	11.98	55.11	1479.
1200	2.59	34.47	1188	27.53	63.7	12.30	58.92	1480.
1250	2.53	34.49	1237	27.55	61.9	12.61	62.82	1480.
1300	2.47	34.50	1286	27.56	60.8	12.92	66.79	1481.
1350	2.42	34.51	1336	27.57	60.1	13.22	70.83	1482.
1400	2.37	34.52	1385	27.58	58.8	13.51	74.93	1482.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6- 55

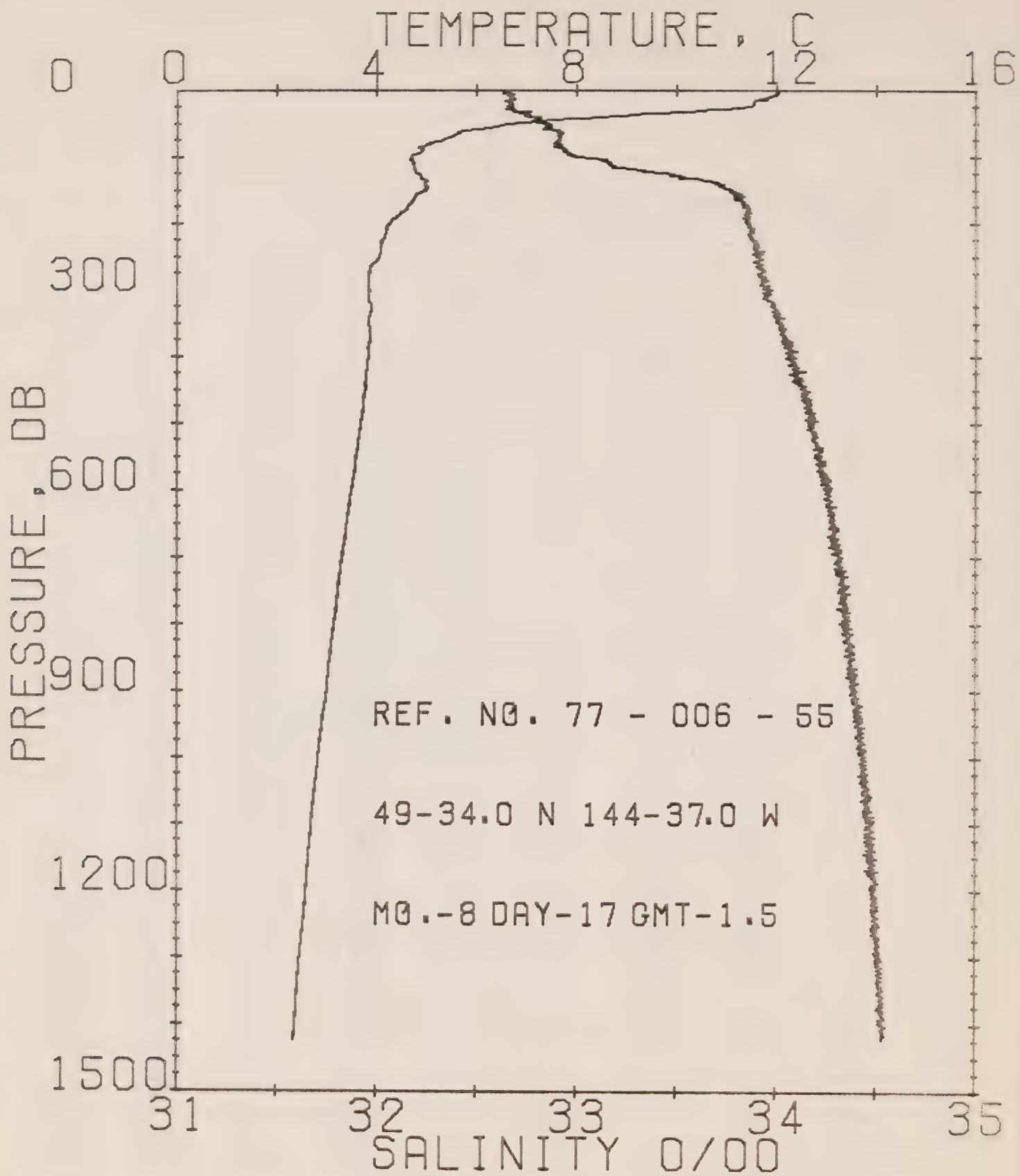
DATE 17/ 8/ 77

POSITION 49-34.0N, 144-37.0W

GMT 1.5

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA J	POT. EN	SOUND
0	12.02	32.84	0	24.78	317.6	.00	.00	1495.
5	11.98	32.88	5	24.82	314.0	.16	.00	1495.
10	11.81	32.87	10	24.84	311.8	.32	.02	1494.
15	11.56	32.84	15	24.87	309.8	.47	.04	1493.
20	11.53	32.87	20	24.89	307.3	.62	.05	1493.
25	11.51	32.88	25	24.93	303.4	.79	.10	1493.
30	10.43	32.89	30	25.10	287.5	.93	.14	1490.
35	9.19	32.75	35	25.35	263.7	1.06	.19	1485.
40	8.36	32.81	40	25.52	247.6	1.19	.25	1482.
45	7.53	32.82	45	25.59	232.0	1.31	.29	1473.
50	6.59	32.86	50	25.81	220.0	1.43	.34	1475.
55	5.28	32.84	55	25.84	217.5	1.53	.40	1474.
60	5.73	32.90	60	25.95	206.8	1.64	.40	1472.
65	5.59	32.93	65	25.99	203.4	1.74	.55	1472.
70	5.44	32.92	70	26.00	202.0	1.84	.60	1471.
75	5.29	32.92	75	26.02	200.5	1.95	.67	1471.
80	5.03	32.90	80	26.04	198.9	2.05	.75	1470.
90	4.92	32.94	89	26.08	194.9	2.24	.92	1469.
100	4.89	33.02	99	26.16	186.9	2.43	1.11	1469.
110	4.73	33.10	109	26.27	176.6	2.61	1.35	1469.
120	4.77	33.34	119	26.41	164.1	2.79	1.50	1470.
130	4.87	33.34	129	26.56	150.0	2.94	1.70	1471.
140	4.95	33.70	139	26.67	139.4	3.09	1.90	1471.
150	4.96	33.77	149	26.73	133.7	3.22	2.10	1472.
160	4.75	33.84	159	26.81	126.6	3.35	2.31	1471.
170	4.65	33.84	169	26.82	125.9	3.49	2.52	1471.
180	4.56	33.86	179	26.84	123.6	3.60	2.74	1471.
190	4.39	33.86	189	26.86	121.3	3.73	2.97	1470.
200	4.26	33.86	199	26.88	119.8	3.85	3.21	1470.
210	4.19	33.88	209	26.90	118.0	3.97	3.40	1470.
220	4.16	33.87	218	26.90	118.4	4.09	3.72	1470.
230	4.08	33.90	228	26.93	115.7	4.20	3.99	1469.
240	4.08	33.90	230	26.93	115.7	4.32	4.27	1470.
250	4.05	33.91	248	26.94	114.8	4.43	4.55	1470.
260	3.92	33.91	250	26.95	113.3	4.55	4.85	1469.
270	3.86	33.93	268	26.97	111.5	4.66	5.15	1469.
280	3.84	33.94	273	26.98	110.6	4.77	5.47	1469.
290	3.84	33.93	280	26.98	111.3	4.88	5.79	1469.
300	3.86	33.97	298	27.00	109.1	4.99	6.12	1470.





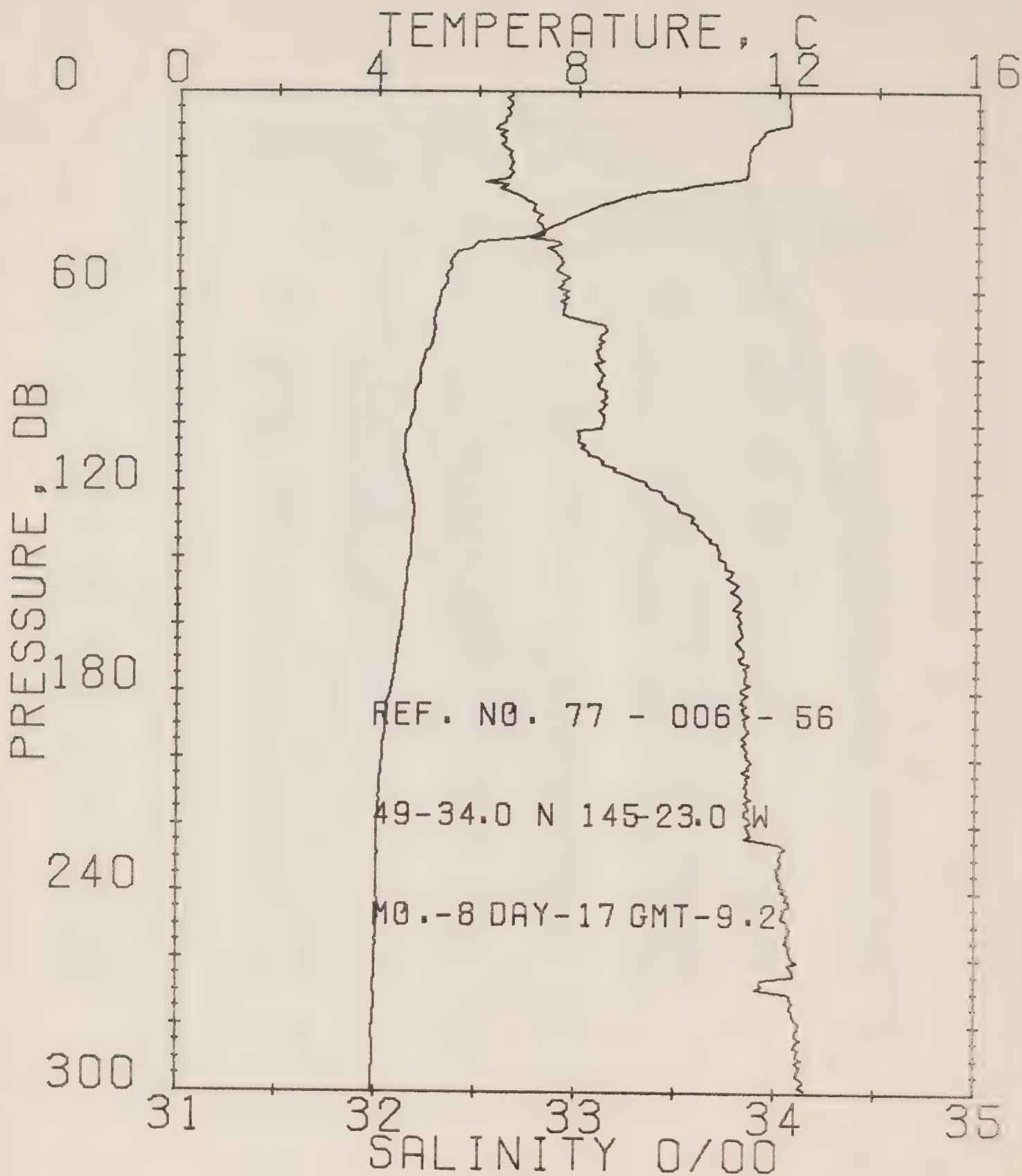
## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8- 55

DATE 17/ 8/ 77

POSITION 49-34.0N, 144-37.0W 547 1.5

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.02	32.04	0	24.70	317.6	0.00	0.00	1475.0
50	8.59	32.08	50	25.31	220.0	1.43	0.50	1475.0
100	4.69	33.02	99	26.10	186.9	2.43	1.11	1475.0
150	4.95	33.77	149	26.75	153.7	3.22	2.10	1472.0
200	4.26	33.00	199	26.86	119.8	3.85	3.21	1470.0
250	4.05	33.91	243	26.94	114.8	4.43	4.55	1470.0
300	3.60	33.97	290	27.00	109.1	4.90	5.12	1475.0
350	3.64	34.02	347	27.05	105.2	5.53	7.91	1471.0
400	3.63	34.00	397	27.06	102.3	6.05	9.80	1471.0
450	3.77	34.14	440	27.15	96.4	6.54	12.00	1472.0
500	3.58	34.19	490	27.19	92.3	7.02	14.51	1475.0
550	3.58	34.22	545	27.25	89.0	7.47	16.70	1475.0
600	3.49	34.26	595	27.27	85.7	7.91	19.32	1475.0
650	3.40	34.28	644	27.30	83.2	8.33	22.01	1474.0
700	3.51	34.34	694	27.35	78.7	8.74	24.63	1474.0
750	3.22	34.51	745	27.39	79.8	9.14	27.70	1475.0
800	3.14	34.57	795	27.39	75.2	9.53	30.81	1475.0
850	3.06	34.59	842	27.41	73.0	9.90	35.97	1475.0
900	3.00	34.56	892	27.41	73.4	10.27	37.25	1477.0
950	2.91	34.40	941	27.44	71.0	10.63	40.51	1477.0
1000	2.83	34.43	990	27.47	68.7	10.97	44.04	1477.0
1050	2.76	34.46	1040	27.49	66.2	11.31	47.58	1478.0
1100	2.69	34.48	1089	27.52	64.1	11.64	51.16	1479.0
1150	2.64	34.47	1133	27.52	64.2	11.96	54.60	1479.0
1200	2.59	34.50	1188	27.54	62.2	12.27	56.87	1480.0
1250	2.53	34.51	1237	27.55	61.1	12.50	62.55	1480.0
1300	2.47	34.52	1280	27.57	59.3	12.80	60.40	1482.0
1350	2.42	34.52	1330	27.56	59.1	13.10	70.49	1482.0
1400	2.37	34.53	1380	27.59	58.3	13.48	74.50	1482.0



## OFFSHORE OCEANOGRAPHY GROUP

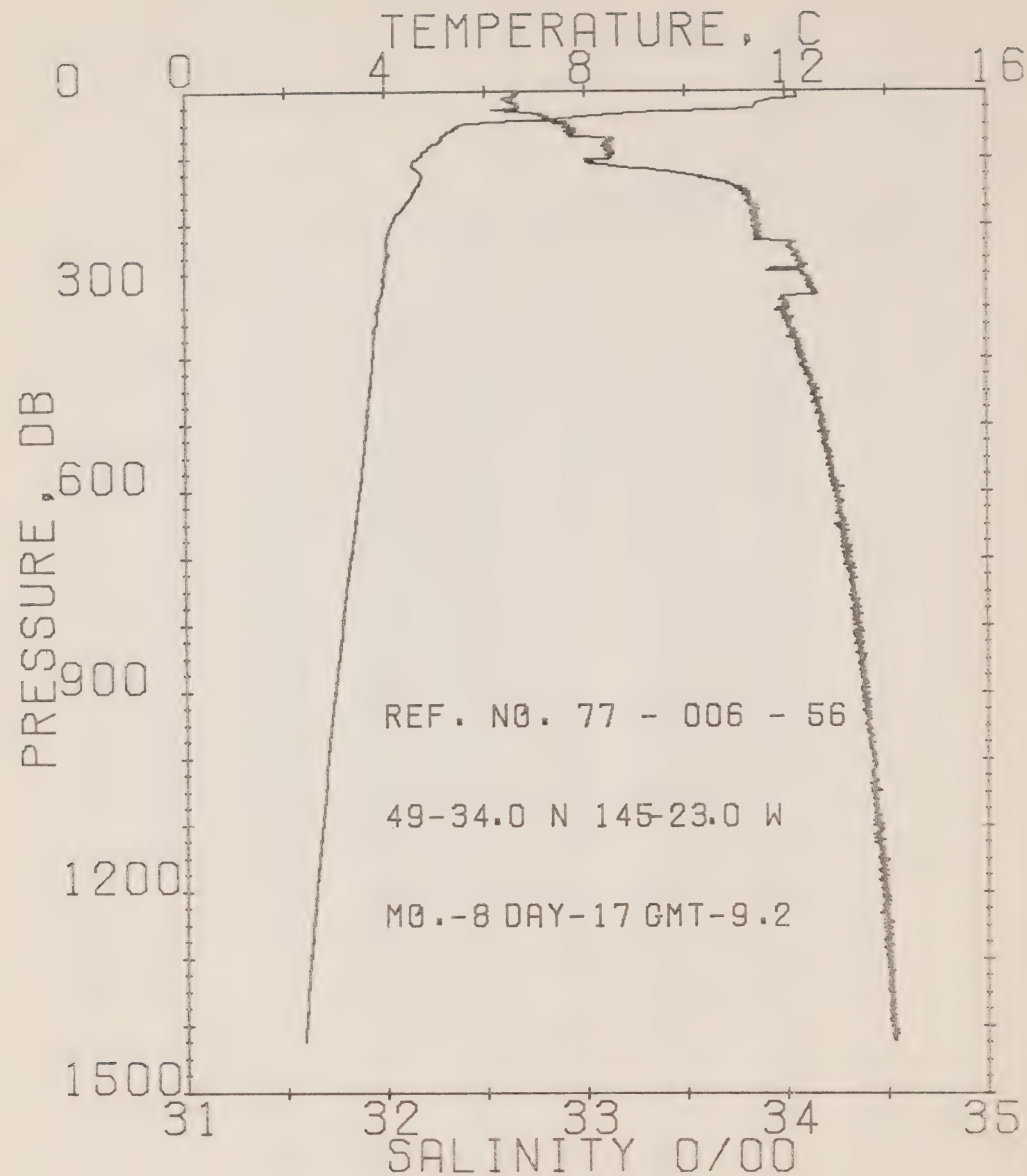
REFERENCE NO. 17- 0- 56

DATE 17/ 8/77

POSITION 49-34.0N, 145-23.0W GMT 9.2

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.21	32.67	0	24.77	319.1	.00	.00	1495.
5	12.23	32.64	5	24.74	321.4	.16	.00	1495.
10	12.22	32.61	10	24.71	324.2	.32	.02	1495.
15	11.58	32.63	15	24.85	311.0	.49	.04	1493.
20	11.40	32.66	20	24.90	306.2	.63	.06	1493.
25	11.36	32.66	25	24.91	305.5	.79	.10	1493.
30	9.43	32.64	30	25.22	276.2	.93	.14	1486.
35	8.29	32.78	35	25.51	248.5	1.06	.18	1482.
40	7.57	32.61	40	25.64	236.1	1.18	.25	1479.
45	6.05	32.69	45	25.91	210.9	1.30	.26	1473.
50	5.48	32.91	50	25.99	202.8	1.40	.30	1471.
55	5.37	32.93	55	26.02	200.3	1.50	.33	1471.
60	5.27	32.95	60	26.04	198.1	1.60	.44	1470.
65	5.17	32.93	65	26.04	198.2	1.70	.51	1470.
70	5.13	33.11	70	26.18	184.7	1.80	.57	1470.
75	5.10	33.13	75	26.21	182.6	1.89	.64	1470.
80	4.93	33.11	80	26.21	182.5	1.99	.71	1470.
90	4.75	33.14	89	26.26	177.9	2.17	.87	1469.
100	4.66	33.13	99	26.26	178.2	2.34	1.04	1469.
110	4.54	33.10	109	26.25	179.0	2.53	1.24	1468.
120	4.69	33.42	119	26.48	157.1	2.70	1.44	1470.
130	4.73	33.60	129	26.62	143.3	2.85	1.60	1470.
140	4.67	33.71	139	26.71	135.2	2.99	1.82	1470.
150	4.57	33.77	149	26.77	129.5	3.12	2.01	1470.
160	4.50	33.61	159	26.81	125.9	3.24	2.21	1470.
170	4.39	33.62	169	26.83	124.6	3.37	2.42	1470.
180	4.29	33.63	179	26.85	122.6	3.49	2.64	1469.
190	4.18	33.64	189	26.87	120.4	3.61	2.87	1469.
200	4.12	33.66	199	26.89	118.9	3.73	3.10	1469.
210	4.07	33.66	208	26.90	118.3	3.85	3.33	1469.
220	4.03	33.66	216	26.90	118.3	3.97	3.61	1469.
230	4.03	34.03	228	27.03	105.7	4.08	3.87	1469.
240	4.03	34.03	236	27.04	105.0	4.18	4.12	1470.
250	4.02	34.07	248	27.07	102.5	4.29	4.38	1470.
260	4.01	34.09	258	27.09	100.9	4.39	4.64	1470.
270	3.98	34.01	268	27.02	107.0	4.50	4.93	1470.
280	3.96	34.12	276	27.12	98.1	4.60	5.21	1470.
290	3.96	34.14	288	27.13	97.3	4.69	5.50	1470.
300	3.94	34.14	296	27.13	96.9	4.79	5.79	1470.





## OFFSHORE OCEANOGRAPHY GROUP

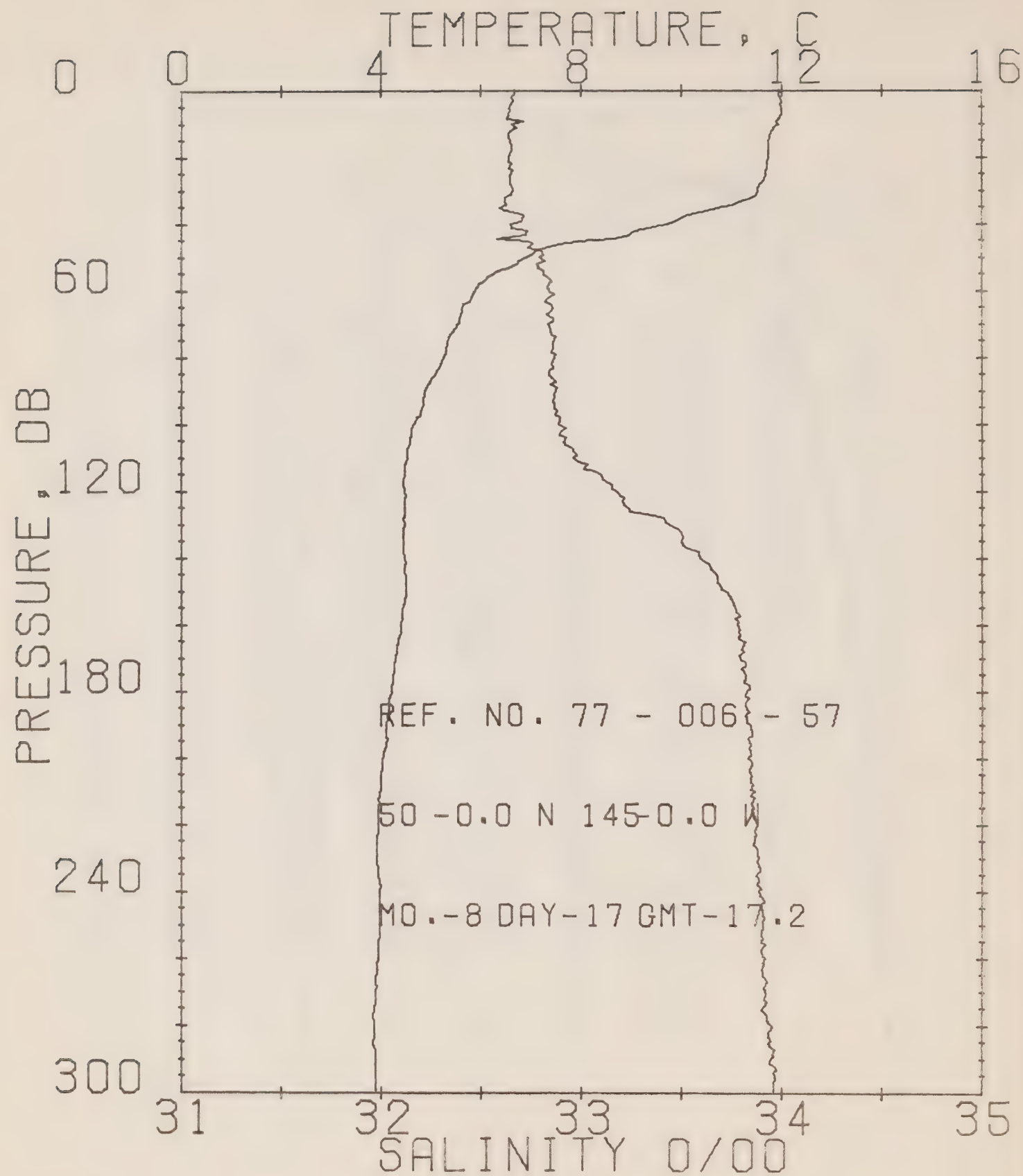
REFERENCE NO. 77- 6- 56

DATE 17/ 3/ 77

POSITION 49-34.0N, 145-23.0W

GMI 9.2

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND.
0	12.21	32.87	0	24.77	319.1	.00	.00	1495.
50	5.48	32.91	50	25.99	202.8	1.40	.35	1471.
100	4.86	33.13	99	26.26	178.2	2.34	1.04	1469.
150	4.57	33.17	149	26.77	129.5	3.12	2.01	1470.
200	4.12	33.86	199	26.89	118.9	3.73	3.10	1469.
250	4.02	34.07	248	27.07	102.5	4.29	4.36	1470.
300	3.94	34.14	298	27.13	96.9	4.70	5.79	1470.
350	3.82	34.02	347	27.05	104.7	5.32	7.54	1470.
400	3.75	34.07	397	27.10	100.8	5.83	9.49	1471.
450	3.68	34.14	446	27.15	95.7	6.32	11.61	1472.
500	3.61	34.18	496	27.19	92.4	6.79	13.87	1472.
550	3.56	34.23	545	27.24	88.2	7.24	16.30	1473.
600	3.47	34.23	595	27.25	87.5	7.68	18.87	1473.
650	3.39	34.28	644	27.30	83.5	8.10	21.57	1474.
700	3.29	34.32	694	27.35	80.1	8.51	24.59	1474.
750	3.19	34.35	743	27.35	78.4	8.91	27.32	1475.
800	3.12	34.35	793	27.37	76.6	9.29	30.35	1475.
850	3.06	34.37	842	27.40	74.2	9.67	33.51	1475.
900	2.97	34.36	891	27.42	72.9	10.04	36.76	1476.
950	2.89	34.41	941	27.45	70.1	10.39	40.14	1477.
1000	2.82	34.45	990	27.47	68.3	10.70	43.59	1477.
1050	2.77	34.45	1040	27.47	68.5	11.08	47.14	1478.
1100	2.71	34.46	1089	27.51	65.4	11.41	50.81	1479.
1150	2.64	34.48	1138	27.52	63.7	11.74	54.54	1479.
1200	2.58	34.49	1188	27.54	62.7	12.06	58.34	1480.
1250	2.51	34.50	1237	27.55	61.2	12.37	62.22	1480.
1300	2.46	34.51	1286	27.57	60.2	12.67	66.10	1481.
1350	2.41	34.53	1336	27.59	58.2	12.97	70.22	1482.
1400	2.36	34.53	1385	27.59	57.9	13.27	74.55	1482.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 17- 6- 57

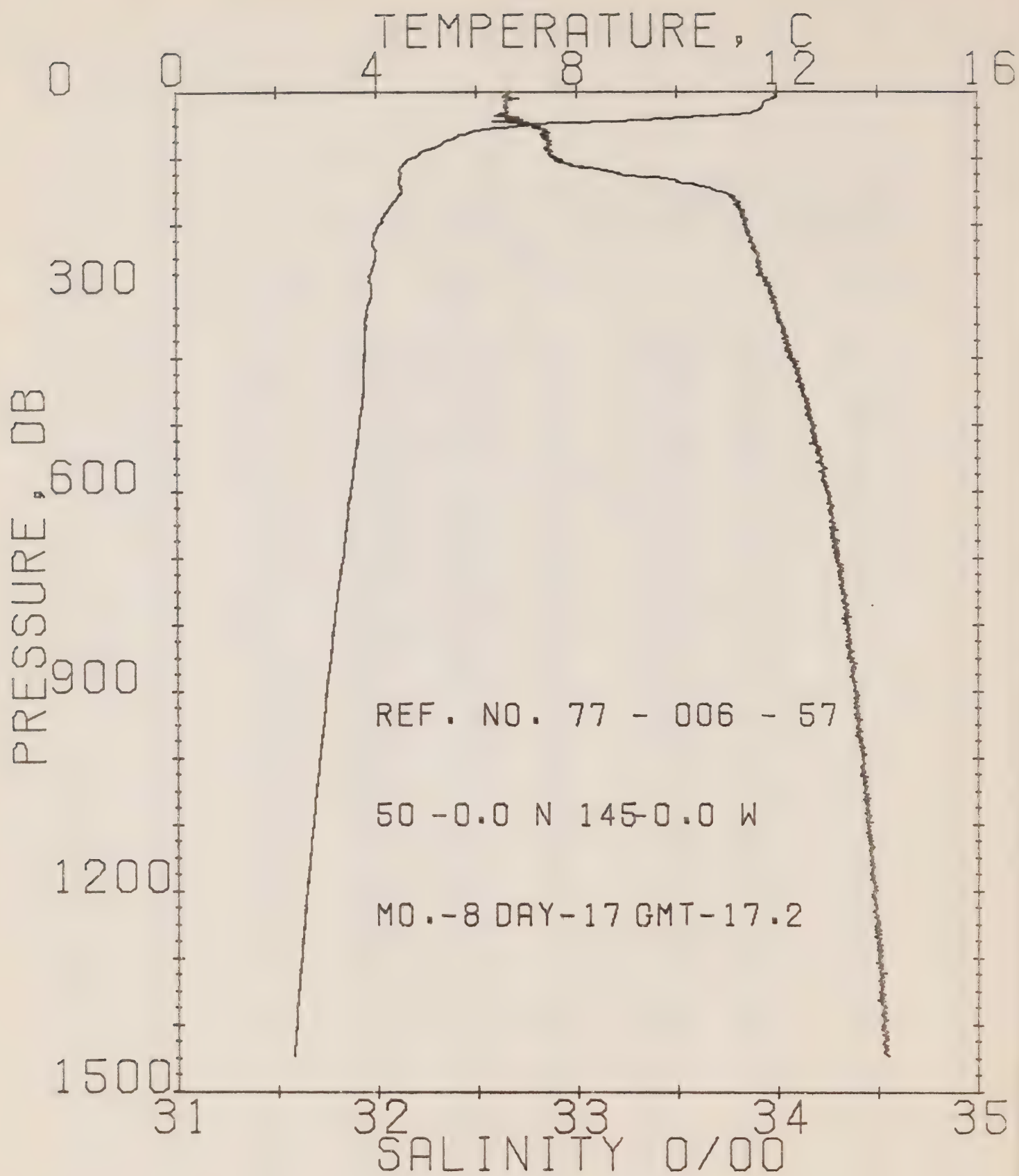
DATE 17/ 8/ 77

POSITION 30- 00N, 145- 00W

GMT 17.2

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA J	POT. EN	SOUND
0	11.96	32.67	0	24.81	314.8	.00	.00	1494.
5	11.99	32.64	5	24.79	317.3	.16	.00	1495.
10	11.94	32.66	10	24.81	315.0	.32	.02	1494.
15	11.75	32.64	15	24.83	313.1	.47	.04	1494.
20	11.73	32.64	20	24.83	313.3	.63	.06	1494.
25	11.68	32.65	25	24.85	311.8	.79	.10	1494.
30	11.51	32.66	30	24.89	308.1	.94	.14	1493.
35	10.74	32.60	35	24.98	299.6	1.09	.19	1491.
40	9.71	32.65	40	25.19	279.5	1.24	.25	1487.
45	8.06	32.72	45	25.56	250.1	1.37	.31	1481.
50	6.89	32.79	50	25.72	228.9	1.49	.36	1477.
55	6.24	32.62	55	25.82	219.1	1.60	.42	1474.
60	5.67	32.65	60	25.89	212.5	1.71	.49	1475.
65	5.64	32.66	65	25.93	209.0	1.81	.55	1472.
70	5.56	32.64	70	25.92	209.7	1.92	.60	1472.
75	5.34	32.66	75	25.96	205.8	2.02	.70	1471.
80	5.26	32.67	80	25.96	204.1	2.12	.76	1471.
90	4.68	32.67	99	26.05	199.7	2.33	.96	1469.
100	4.68	32.69	99	26.06	196.5	2.52	1.15	1465.
110	4.52	32.96	109	26.14	189.4	2.72	1.35	1465.
120	4.47	33.17	119	26.31	173.5	2.90	1.57	1466.
130	4.47	33.44	129	26.52	153.4	3.06	1.76	1469.
140	4.43	33.59	139	26.64	142.1	3.21	1.96	1469.
150	4.50	33.73	149	26.74	132.4	3.35	2.16	1475.
160	4.41	33.78	159	26.86	127.3	3.49	2.35	1470.
170	4.29	33.60	169	26.85	124.7	3.60	2.60	1469.
180	4.21	33.85	179	26.86	121.9	3.72	2.82	1469.
190	4.12	33.64	189	26.86	120.0	3.85	3.05	1469.
200	4.04	33.83	199	26.88	119.8	3.97	3.26	1469.
210	3.98	33.86	209	26.91	117.2	4.08	3.55	1469.
220	3.94	33.68	218	26.93	115.5	4.20	3.79	1469.
230	3.92	33.89	226	26.93	115.1	4.32	4.05	1469.
240	3.98	33.89	236	26.93	115.4	4.43	4.35	1469.
250	3.97	33.91	246	26.95	113.9	4.55	4.62	1469.
260	3.94	33.92	256	26.96	113.6	4.66	4.91	1469.
270	3.91	33.92	266	26.96	112.7	4.77	5.22	1469.
280	3.67	33.95	276	26.99	110.1	4.89	5.55	1469.
290	3.90	33.95	288	26.96	110.7	5.00	5.85	1470.
300	3.69	33.37	298	27.00	109.1	5.11	6.16	1470.





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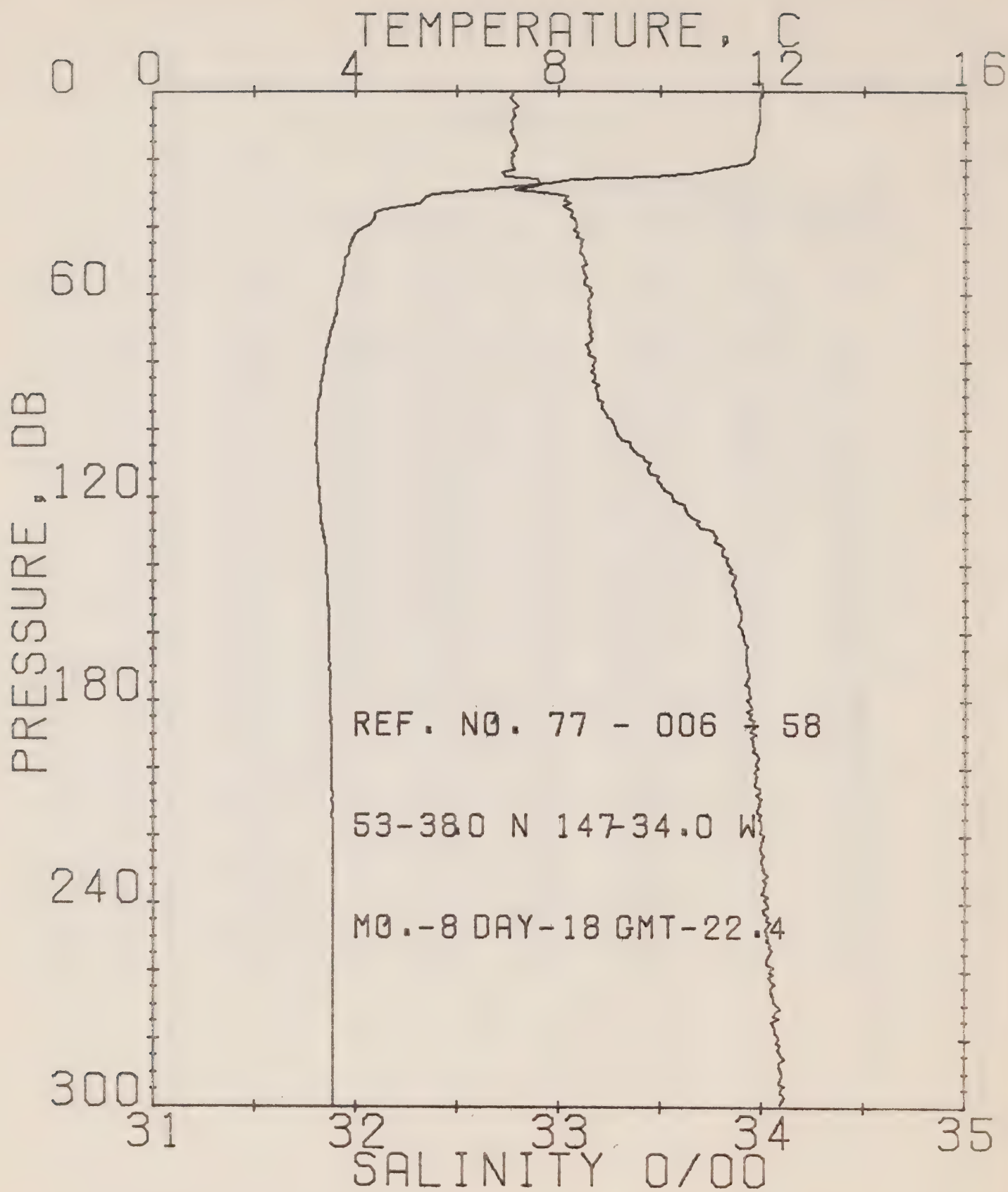
REFERENCE NO. 77- 6- 57

DATE 17/ 8/77

POSITION 50- .00N, 145- .00W

GMT 17.2

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SSURF
0	11.96	32.67	0	24.81	314.8	.00	.00	1494.
50	6.69	32.79	50	25.72	228.9	1.49	.36	1477.
100	4.68	32.69	99	26.06	196.5	2.52	1.15	1468.
150	4.50	33.75	149	26.74	132.4	3.35	2.16	1470.
200	4.04	33.83	199	26.88	119.8	3.97	3.28	1469.
250	3.97	33.91	248	26.95	113.9	4.55	4.62	1469.
300	3.69	33.97	298	27.00	109.1	5.11	6.16	1476.
350	3.78	34.02	347	27.06	104.3	5.64	7.95	1470.
400	3.75	34.06	397	27.09	101.7	6.15	9.91	1471.
450	3.73	34.12	446	27.14	96.9	6.65	12.04	1472.
500	3.64	34.18	496	27.19	92.6	7.12	14.34	1472.
550	3.55	34.22	545	27.23	88.8	7.58	16.76	1473.
600	3.47	34.25	595	27.27	86.0	8.01	19.35	1473.
650	3.38	34.28	644	27.30	83.2	8.44	22.05	1474.
700	3.31	34.29	694	27.31	82.1	8.85	24.69	1474.
750	3.21	34.33	743	27.35	78.7	9.25	27.85	1475.
800	3.13	34.34	793	27.37	76.8	9.64	30.91	1475.
850	3.05	34.37	842	27.40	74.3	10.02	34.09	1476.
900	2.97	34.39	891	27.42	72.4	10.39	37.36	1476.
950	2.92	34.40	941	27.44	71.2	10.75	40.77	1477.
1000	2.84	34.43	990	27.46	68.9	11.10	44.25	1478.
1050	2.77	34.45	1040	27.48	68.0	11.44	47.33	1478.
1100	2.71	34.45	1089	27.49	66.7	11.77	51.49	1479.
1150	2.64	34.47	1138	27.52	64.5	12.10	55.23	1479.
1200	2.58	34.47	1188	27.53	63.6	12.42	59.06	1480.
1250	2.52	34.49	1237	27.54	62.1	12.73	62.95	1480.
1300	2.47	34.51	1286	27.56	60.2	13.04	66.90	1431.
1350	2.41	34.50	1336	27.56	60.4	13.34	70.97	1482.
1400	2.36	34.55	1385	27.59	57.9	13.63	75.06	1482.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 5- 55

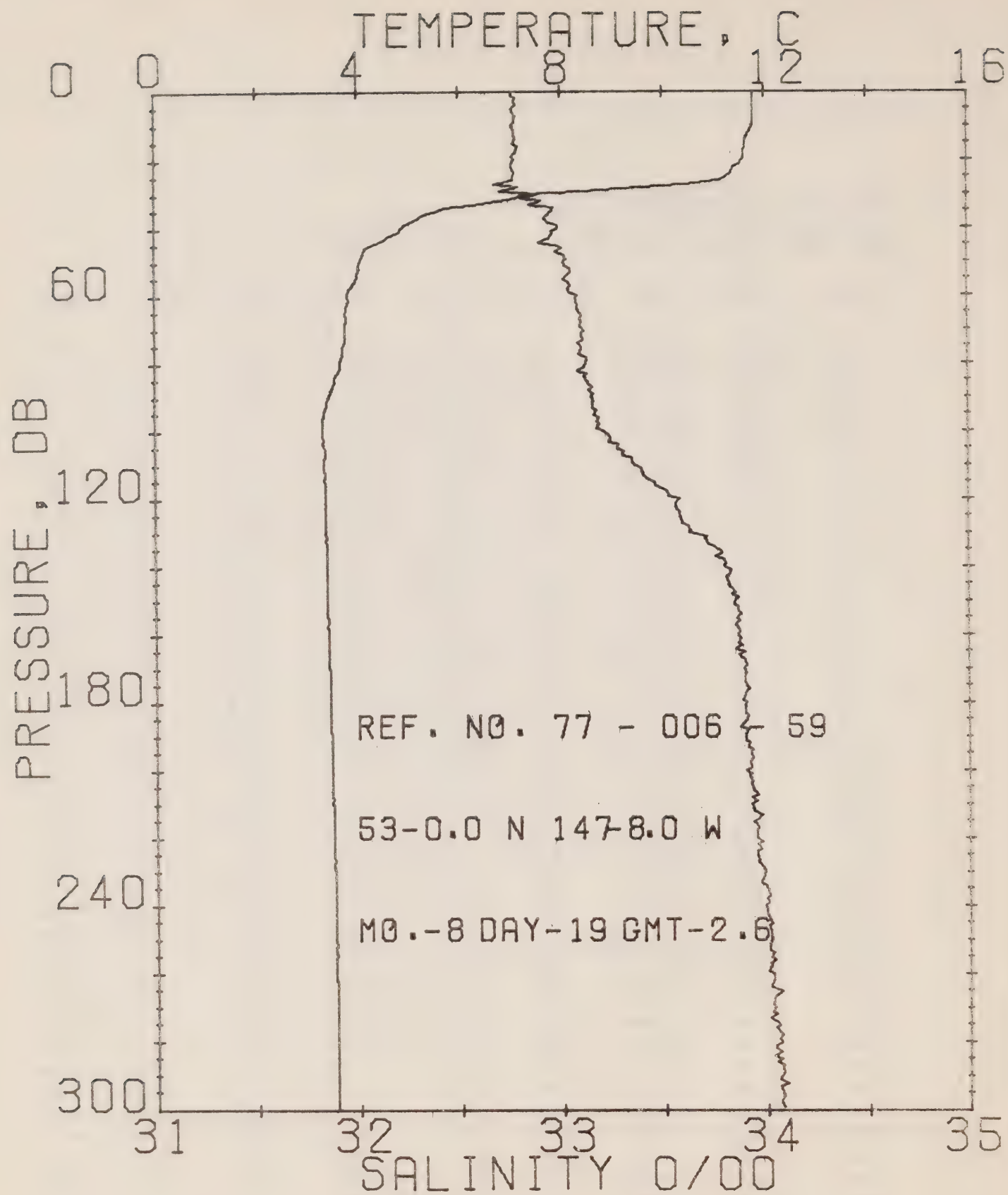
DATE 18/ 8/ 77

POSITION 33-36.0N, 147-34.0W

GMT 22.4

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	11.97	32.77	0	24.89	307.3	.00	.00	1495.
5	11.96	32.78	5	24.90	306.3	.15	.00	1495.
10	11.93	32.77	10	24.90	306.8	.31	.02	1495.
15	11.86	32.78	15	24.92	304.8	.46	.04	1494.
20	11.80	32.77	20	24.92	305.1	.61	.06	1494.
25	9.85	32.74	25	25.24	274.5	.76	.10	1487.
30	5.89	32.94	30	25.99	203.0	.88	.15	1472.
35	4.50	33.06	35	26.21	181.5	.97	.16	1467.
40	4.17	33.09	40	26.27	176.1	1.06	.19	1460.
45	3.90	33.11	45	26.32	171.7	1.15	.25	1465.
50	3.78	33.13	50	26.35	169.1	1.23	.27	1464.
55	3.74	33.14	55	26.35	168.3	1.32	.32	1464.
60	3.65	33.16	60	26.36	165.5	1.40	.37	1464.
65	3.62	33.16	65	26.38	165.7	1.48	.42	1464.
70	3.52	33.15	70	26.39	165.1	1.57	.46	1463.
75	3.44	33.14	74	26.38	165.6	1.65	.54	1463.
80	3.38	33.16	79	26.42	161.9	1.73	.66	1463.
90	3.28	33.19	89	26.44	160.0	1.80	.74	1463.
100	3.22	33.28	99	26.52	153.2	2.05	.89	1463.
110	3.25	33.45	109	26.65	140.6	2.20	1.05	1463.
120	3.28	33.56	119	26.73	132.6	2.33	1.21	1464.
130	3.35	33.76	129	26.89	118.3	2.46	1.37	1465.
140	3.42	33.84	139	26.94	113.2	2.58	1.55	1465.
150	3.45	33.88	149	26.97	110.3	2.69	1.70	1465.
160	3.46	33.91	159	26.99	108.3	2.80	1.87	1466.
170	3.48	33.93	169	27.01	107.0	2.90	2.05	1466.
180	3.50	33.93	179	27.01	107.2	3.01	2.24	1466.
190	3.51	33.97	189	27.04	104.6	3.12	2.44	1466.
200	3.53	33.98	196	27.05	103.5	3.22	2.65	1467.
210	3.53	33.99	208	27.05	103.3	3.33	2.87	1467.
220	3.54	34.02	216	27.07	101.5	3.43	3.09	1467.
230	3.54	34.01	228	27.07	102.2	3.53	3.33	1467.
240	3.55	34.03	235	27.08	100.9	3.63	3.57	1468.
250	3.55	34.03	248	27.08	100.0	3.73	3.82	1468.
260	3.55	34.04	258	27.09	99.7	3.83	4.05	1468.
270	3.55	34.07	260	27.12	97.6	3.93	4.35	1468.
280	3.55	34.09	278	27.13	96.7	4.03	4.62	1468.
290	3.54	34.10	286	27.14	95.6	4.13	4.90	1468.
300	3.54	34.11	296	27.15	94.8	4.22	5.19	1469.





## OFFSHORE OCEANOGRAPHY GROUP

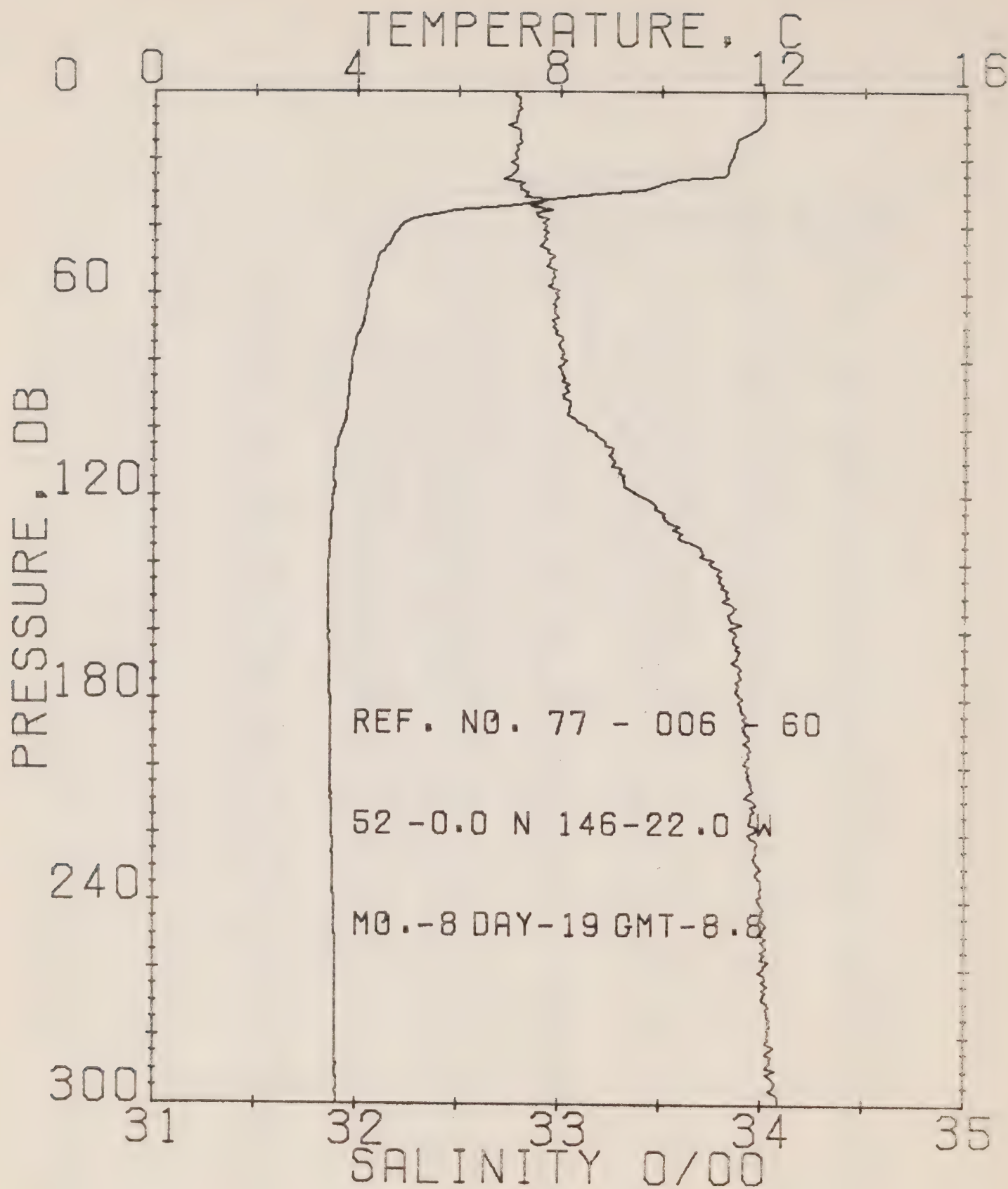
REFERENCE NO. 77- 6- 59

DATE 19/ 8/77

POSITION 53- 00N, 147- 00W

GMT 2.6

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	11.78	32.76	0	24.92	304.6	.00	.00	1494.
5	11.78	32.76	5	24.92	304.5	.15	.00	1494.
10	11.77	32.76	10	24.92	304.8	.30	.02	1494.
15	11.62	32.77	15	24.95	302.0	.46	.03	1494.
20	11.57	32.77	20	24.96	300.8	.61	.06	1493.
25	11.22	32.76	25	25.02	295.2	.76	.10	1492.
30	7.51	32.88	30	25.73	227.3	.80	.13	1478.
35	5.54	32.96	35	26.02	200.1	1.00	.17	1471.
40	4.88	32.98	40	26.12	191.0	1.10	.21	1468.
45	4.26	32.97	45	26.17	185.9	1.19	.25	1466.
50	4.06	33.02	50	26.23	180.3	1.28	.29	1465.
55	3.97	33.02	55	26.24	179.4	1.37	.34	1465.
60	3.82	33.08	60	26.30	173.6	1.46	.39	1464.
65	3.77	33.09	65	26.32	172.0	1.55	.43	1464.
70	3.76	33.11	70	26.33	170.7	1.64	.51	1464.
75	3.72	33.10	75	26.33	171.1	1.72	.57	1464.
80	3.66	33.12	79	26.35	169.0	1.81	.64	1464.
90	3.42	33.15	89	26.39	164.8	1.97	.76	1463.
100	3.30	33.20	99	26.45	159.4	2.14	.94	1463.
110	3.34	33.36	109	26.57	148.0	2.22	1.10	1464.
120	3.35	33.58	119	26.74	131.8	2.43	1.27	1464.
130	3.37	33.63	129	26.78	128.3	2.56	1.44	1464.
140	3.38	33.60	139	26.92	115.4	2.68	1.60	1465.
150	3.39	33.65	149	26.96	111.9	2.79	1.77	1465.
160	3.41	33.67	159	26.97	110.8	2.91	1.94	1465.
170	3.43	33.90	169	26.99	109.0	3.02	2.13	1466.
180	3.44	33.90	179	26.99	108.7	3.12	2.32	1466.
190	3.46	33.90	189	26.99	109.3	3.23	2.53	1466.
200	3.47	33.91	198	26.99	108.8	3.34	2.74	1466.
210	3.48	33.93	206	27.01	107.1	3.45	2.96	1467.
220	3.50	33.95	216	27.03	105.6	3.55	3.20	1467.
230	3.51	33.99	226	27.06	103.1	3.66	3.44	1467.
240	3.52	34.00	238	27.06	102.9	3.76	3.66	1467.
250	3.53	34.02	248	27.06	101.0	3.86	3.94	1468.
260	3.53	34.04	256	27.09	100.2	3.95	4.20	1468.
270	3.54	34.04	266	27.09	99.7	4.06	4.47	1468.
280	3.54	34.06	276	27.11	98.4	4.16	4.75	1468.
290	3.54	34.07	286	27.12	97.7	4.26	5.04	1468.
300	3.55	34.09	296	27.13	96.6	4.36	5.36	1469.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 17- 0- 00

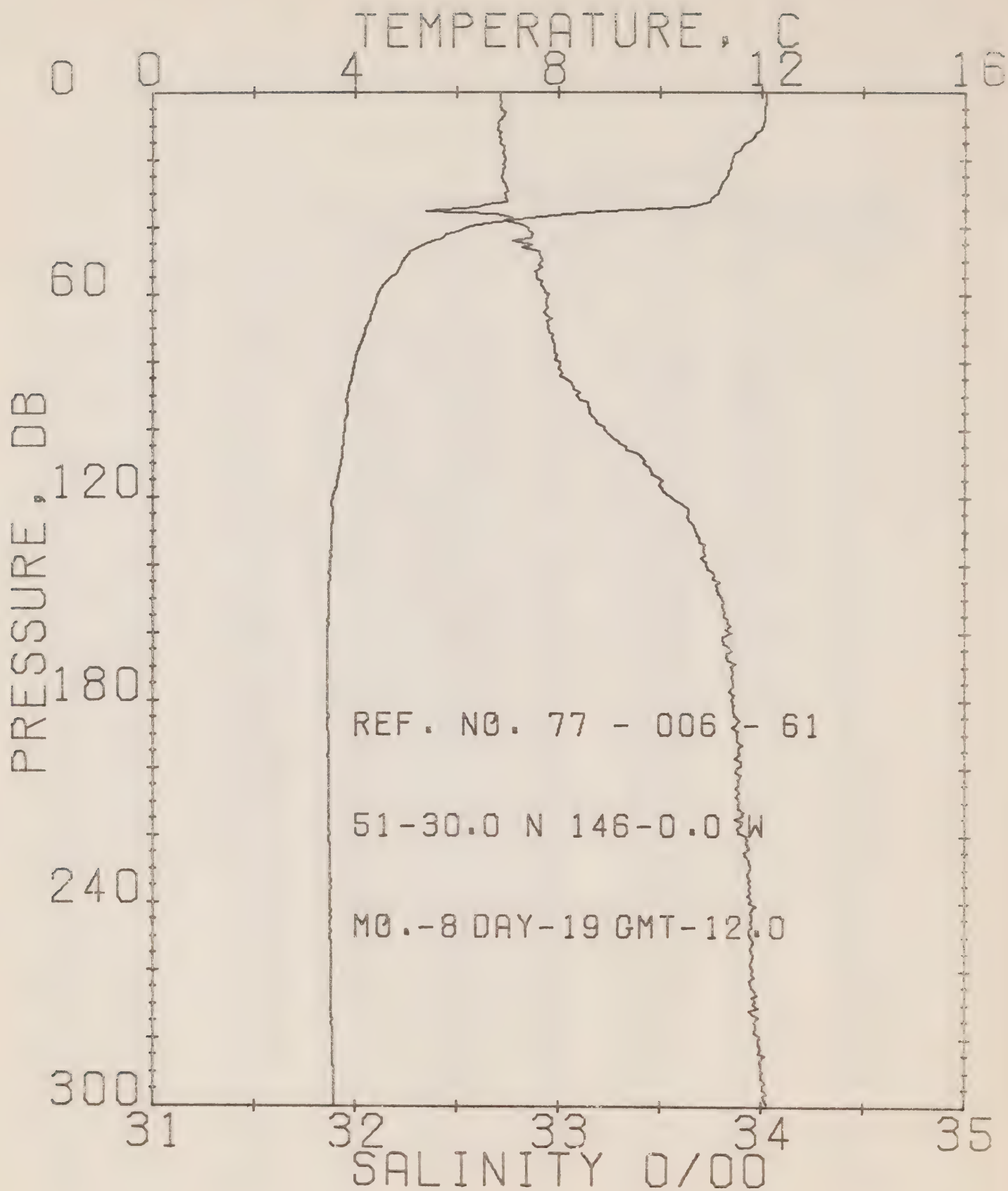
DATE 19/ 8/77

POSITION 32- .0N, 146-22.0W

GMT 8.8

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.03	32.76	0	24.89	307.5	.00	.00	1495.
5	12.02	32.80	5	24.90	305.9	.15	.00	1495.
10	11.98	32.74	10	24.87	309.4	.31	.02	1495.
15	11.48	32.61	15	25.01	296.5	.46	.03	1495.
20	11.57	32.79	20	25.01	296.0	.61	.00	1493.
25	11.23	32.76	25	25.01	296.0	.75	.10	1492.
30	9.07	32.84	30	25.44	255.3	.89	.13	1485.
35	6.00	32.95	35	25.96	205.9	1.01	.17	1473.
40	4.86	32.93	40	26.08	194.8	1.11	.21	1468.
45	4.64	32.92	45	26.09	193.5	1.20	.25	1467.
50	4.59	32.95	50	26.14	188.4	1.30	.30	1467.
55	4.29	32.97	55	26.17	185.9	1.39	.35	1466.
60	4.21	32.96	60	26.19	184.4	1.49	.40	1466.
65	4.17	32.97	65	26.18	184.7	1.59	.46	1466.
70	4.09	32.97	70	26.19	184.4	1.67	.52	1466.
75	3.97	33.00	75	26.22	181.2	1.76	.59	1465.
80	3.90	33.03	79	26.26	177.9	1.85	.66	1465.
90	3.83	33.01	89	26.25	178.4	2.03	.82	1465.
100	3.72	33.14	99	26.36	168.4	2.20	.99	1465.
110	3.57	33.26	109	26.48	156.6	2.37	1.16	1464.
120	3.52	33.39	119	26.58	147.2	2.52	1.34	1465.
130	3.49	33.56	129	26.72	134.4	2.66	1.52	1465.
140	3.45	33.74	139	26.86	120.6	2.78	1.69	1465.
150	3.44	33.84	149	26.94	113.5	2.90	1.86	1465.
160	3.46	33.86	159	26.96	111.6	3.01	2.04	1466.
170	3.47	33.88	169	26.97	110.7	3.12	2.23	1466.
180	3.49	33.91	179	26.99	108.7	3.23	2.42	1466.
190	3.49	33.92	189	27.00	107.7	3.34	2.62	1466.
200	3.50	33.94	199	27.02	106.6	3.45	2.84	1467.
210	3.51	33.95	208	27.02	106.3	3.56	3.00	1467.
220	3.53	33.94	218	27.02	106.7	3.66	3.29	1467.
230	3.54	34.00	228	27.06	103.0	3.77	3.55	1467.
240	3.57	33.99	238	27.05	104.0	3.87	3.78	1466.
250	3.59	34.00	248	27.06	103.1	3.97	4.04	1466.
260	3.60	34.01	258	27.06	102.6	4.08	4.31	1466.
270	3.60	34.03	268	27.08	101.4	4.18	4.58	1466.
280	3.60	34.03	278	27.08	101.1	4.29	4.87	1466.
290	3.61	34.07	238	27.11	99.0	4.38	5.15	1469.
300	3.62	34.07	298	27.10	99.1	4.48	5.46	1469.





## OFFSHORE OCEANOGRAPHY GROUP

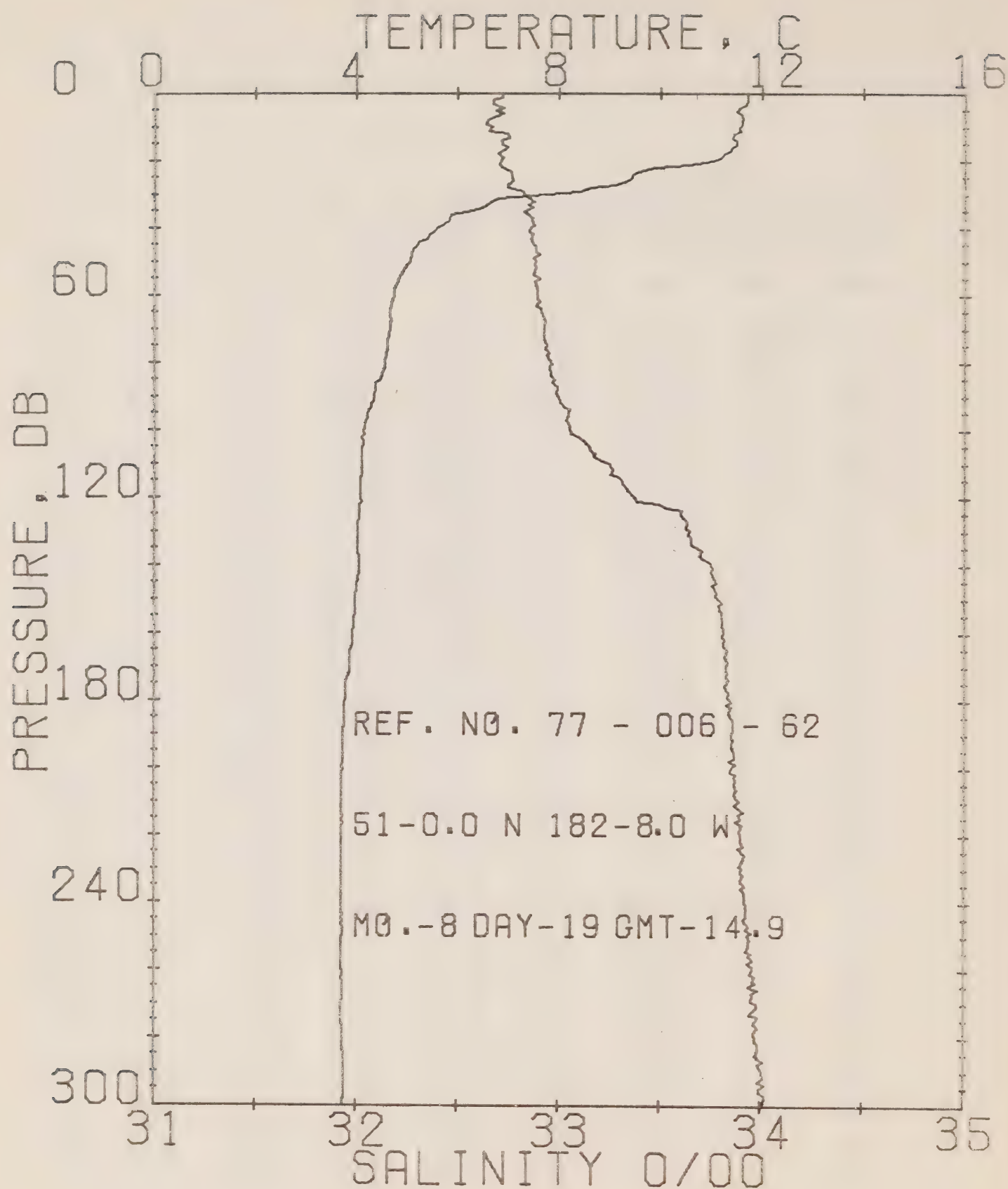
REFERENCE NO. 77- 6- 61

DATE 19/ 8/77

POSITION 51-30.0N, 146- .0W

GMT 12.0

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.07	32.71	0	24.83	313.3	.00	.00	1495.
5	12.06	32.72	5	24.83	312.9	.16	.00	1495.
10	12.02	32.71	10	24.83	313.1	.31	.02	1495.
15	11.57	32.71	15	24.90	306.7	.47	.04	1494.
20	11.42	32.74	20	24.96	300.4	.62	.06	1493.
25	11.31	32.72	25	24.97	300.2	.77	.10	1493.
30	11.12	32.73	30	25.01	296.2	.92	.14	1492.
35	9.39	32.43	35	25.07	290.9	1.07	.19	1485.
40	8.19	32.84	40	25.85	216.2	1.19	.23	1474.
45	5.32	32.86	45	25.97	205.1	1.29	.28	1470.
50	4.93	32.92	50	26.06	196.5	1.39	.33	1469.
55	4.69	32.89	55	26.06	196.0	1.49	.38	1468.
60	4.42	32.95	60	26.14	189.0	1.59	.44	1467.
65	4.33	32.93	65	26.13	189.8	1.68	.50	1467.
70	4.19	32.95	70	26.16	187.0	1.78	.56	1466.
75	4.07	32.98	75	26.20	183.3	1.87	.63	1466.
80	3.97	33.01	79	26.23	180.5	1.96	.70	1465.
90	3.83	33.09	89	26.31	173.2	2.14	.86	1465.
100	3.78	33.22	99	26.42	162.3	2.30	1.02	1465.
110	3.71	33.42	109	26.59	146.7	2.46	1.16	1465.
120	3.54	33.55	119	26.76	135.5	2.60	1.35	1465.
130	3.53	33.67	129	26.80	126.4	2.73	1.51	1465.
140	3.50	33.73	139	26.85	122.1	2.85	1.66	1465.
150	3.46	33.80	149	26.91	116.1	2.97	1.80	1465.
160	3.44	33.85	159	26.95	112.6	3.09	2.04	1465.
170	3.45	33.85	169	26.95	112.8	3.20	2.23	1466.
180	3.45	33.85	179	26.95	112.5	3.31	2.40	1466.
190	3.46	33.88	189	26.97	110.6	3.42	2.64	1466.
200	3.46	33.88	199	26.97	110.5	3.53	2.86	1466.
210	3.47	33.89	208	26.98	110.0	3.64	3.06	1467.
220	3.48	33.92	215	27.00	108.2	3.75	3.33	1467.
230	3.50	33.95	225	27.02	106.2	3.86	3.58	1467.
240	3.50	33.94	235	27.02	106.8	3.97	3.83	1467.
250	3.51	33.95	246	27.02	106.4	4.07	4.10	1467.
260	3.51	33.96	256	27.03	105.7	4.18	4.37	1468.
270	3.53	33.96	266	27.03	105.6	4.29	4.66	1468.
280	3.54	33.99	276	27.06	103.5	4.39	4.95	1468.
290	3.56	34.00	286	27.06	103.1	4.49	5.23	1468.
300	3.57	34.03	296	27.06	101.3	4.60	5.56	1469.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6- 62

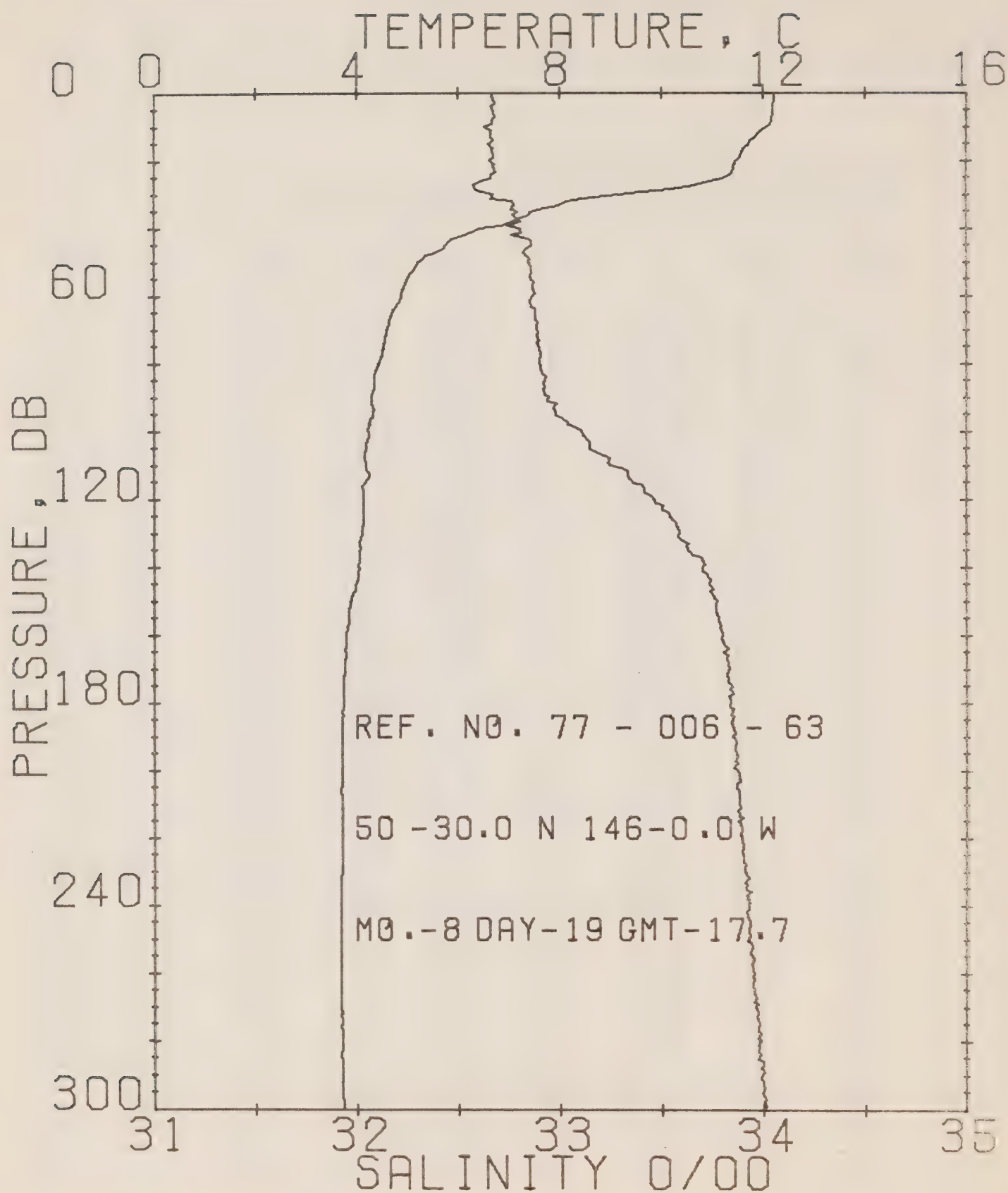
DATE 19/ 3/ 77

POSITION 51- 00N, 182- 8.0W

GMT 14.9

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	11.71	32.72	0	24.90	306.0	.00	.00	1494.
5	11.51	32.70	5	24.91	305.0	.15	.00	1493.
10	11.50	32.67	10	24.89	307.5	.31	.02	1493.
15	11.50	32.72	15	24.93	303.3	.46	.04	1493.
20	11.03	32.71	20	25.01	295.9	.61	.06	1492.
25	9.43	32.77	25	25.33	266.1	.75	.09	1488.
30	7.80	32.83	30	25.62	237.9	.88	.13	1480.
35	6.21	32.83	35	25.84	217.3	.98	.17	1474.
40	5.01	32.86	40	25.94	207.9	1.08	.21	1471.
45	5.20	32.88	45	25.99	202.6	1.18	.25	1470.
50	5.06	32.88	50	26.02	200.4	1.30	.30	1469.
55	4.83	32.90	55	26.06	196.7	1.38	.35	1468.
60	4.74	32.89	60	26.06	196.6	1.49	.41	1463.
65	4.66	32.91	65	26.08	194.2	1.58	.47	1463.
70	4.66	32.93	70	26.09	193.3	1.68	.54	1463.
75	4.60	32.94	75	26.11	191.7	1.78	.61	1463.
80	4.50	32.96	79	26.13	189.5	1.88	.69	1463.
90	4.35	32.99	89	26.16	185.3	2.07	.80	1467.
100	4.14	33.05	99	26.25	178.9	2.25	1.02	1463.
110	4.11	33.24	109	26.40	164.1	2.42	1.21	1467.
120	4.09	33.37	119	26.51	154.6	2.58	1.39	1467.
130	4.04	33.65	129	26.73	133.4	2.72	1.57	1467.
140	4.05	33.75	139	26.81	125.7	2.85	1.75	1463.
150	3.98	33.79	149	26.85	122.5	2.97	1.94	1463.
160	3.93	33.81	159	26.87	120.0	3.10	2.13	1460.
170	3.87	33.83	169	26.89	118.4	3.21	2.30	1467.
180	3.77	33.85	179	26.92	116.0	3.33	2.54	1467.
190	3.75	33.85	189	26.92	115.5	3.45	2.75	1467.
200	3.72	33.86	199	26.93	114.8	3.56	2.96	1467.
210	3.69	33.89	208	26.96	112.2	3.68	3.22	1463.
220	3.70	33.90	218	26.96	111.6	3.79	3.47	1463.
230	3.69	33.90	228	26.97	111.4	3.90	3.72	1463.
240	3.71	33.92	238	26.98	110.5	4.01	3.99	1463.
250	3.72	33.93	246	26.99	109.7	4.12	4.26	1463.
260	3.72	33.96	258	27.01	107.9	4.23	4.53	1469.
270	3.72	33.98	268	27.03	106.3	4.34	4.84	1469.
280	3.74	33.97	278	27.02	107.1	4.44	5.14	1469.
290	3.76	34.00	288	27.04	105.1	4.55	5.45	1469.
300	3.72	34.01	298	27.05	104.3	4.66	5.76	1469.





## OFFSHORE OCEANOGRAPHY GROUP

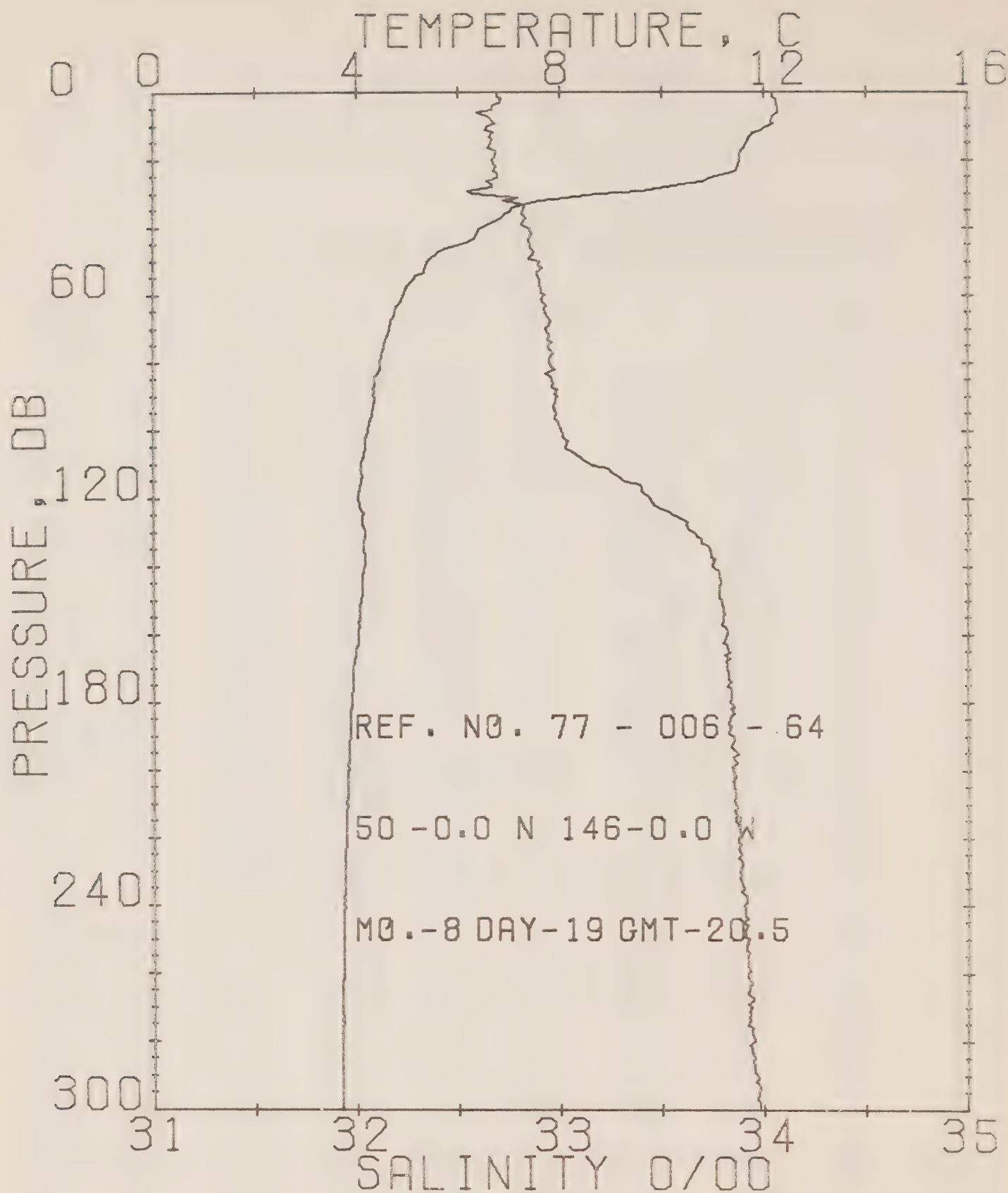
REFERENCE NO. 77- 8- 63

DATE 19/ 8/77

POSITION 30-30.0N, 140- .0W

GMT 17.7

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	REF. EN	500 ft.
0	12.21	32.67	0	24.77	319.0	.00	.00	1495.
5	12.19	32.68	5	24.77	318.4	.16	.00	1495.
10	12.05	32.65	10	24.76	319.5	.32	.00	1495.
15	11.71	32.66	15	24.85	311.6	.48	.00	1494.
20	11.47	32.66	20	24.89	307.6	.63	.00	1493.
25	11.19	32.66	25	24.94	302.7	.78	.00	1492.
30	9.21	32.66	30	25.23	270.4	.93	.14	1485.
35	7.46	32.79	35	25.64	236.5	1.05	.25	1479.
40	6.48	32.79	40	25.77	223.5	1.17	.26	1475.
45	5.74	32.60	45	25.92	209.8	1.28	.27	1472.
50	5.21	32.85	50	25.97	204.7	1.38	.31	1470.
55	5.00	32.60	55	26.01	201.6	1.48	.30	1469.
60	4.68	32.67	60	26.02	199.8	1.58	.34	1469.
65	4.70	32.68	65	26.05	197.1	1.68	.35	1468.
70	4.59	32.89	70	26.07	195.4	1.78	.37	1468.
75	4.53	32.90	75	26.09	193.9	1.88	.34	1467.
80	4.43	32.90	79	26.10	192.6	1.97	.71	1467.
90	4.29	32.94	89	26.15	188.4	2.17	.60	1467.
100	4.24	33.11	99	26.28	175.8	2.35	1.00	1467.
110	4.18	33.24	109	26.40	164.7	2.52	1.24	1467.
120	4.13	33.40	119	26.57	148.5	2.67	1.42	1467.
130	4.10	33.59	129	26.57	138.0	2.82	1.50	1468.
140	4.04	33.70	139	26.77	129.4	2.95	1.79	1468.
150	3.87	33.77	149	26.84	122.6	3.08	1.97	1467.
160	3.80	33.80	159	26.87	119.9	3.20	2.17	1467.
170	3.76	33.83	169	26.90	117.1	3.32	2.35	1467.
180	3.73	33.84	179	26.91	116.3	3.43	2.57	1467.
190	3.71	33.85	189	26.92	115.5	3.55	2.75	1467.
200	3.70	33.87	199	26.94	113.9	3.66	3.02	1467.
210	3.70	33.88	208	26.95	113.2	3.78	3.20	1468.
220	3.70	33.89	216	26.96	112.1	3.89	3.50	1468.
230	3.69	33.91	226	26.97	111.3	4.00	3.70	1468.
240	3.68	33.93	236	26.99	109.7	4.11	4.02	1468.
250	3.68	33.93	246	26.99	109.9	4.22	4.30	1468.
260	3.68	33.95	256	27.01	108.1	4.33	4.55	1468.
270	3.69	33.96	266	27.02	107.3	4.40	4.80	1469.
280	3.70	33.98	276	27.05	106.1	4.54	5.10	1469.
290	3.71	34.00	286	27.04	105.0	4.65	5.40	1469.
300	3.73	34.02	296	27.05	103.9	4.75	5.70	1469.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8- 64

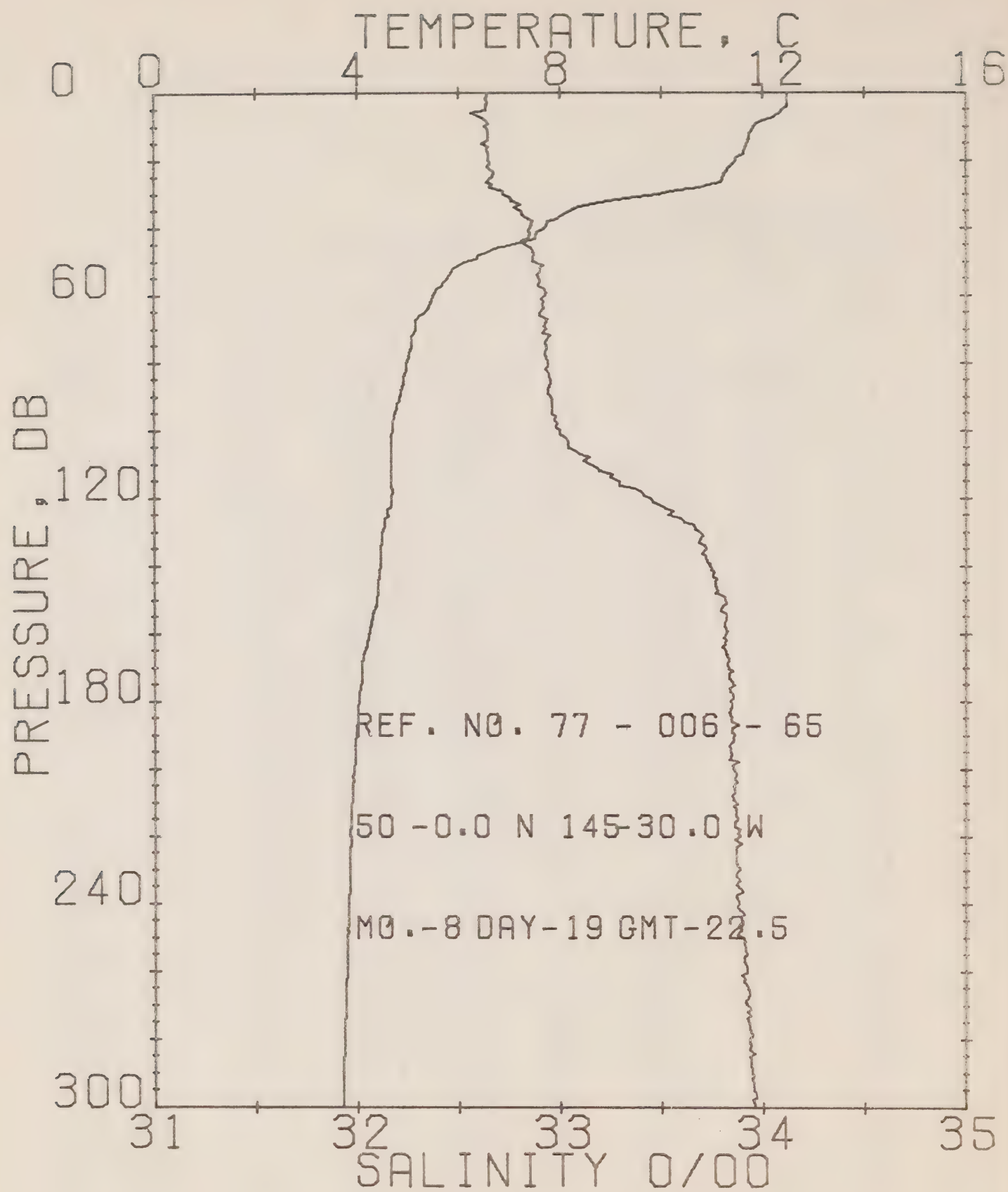
DATE 19/ 8/77

POSITION 50- .0N, 146- .0W

GMT 20.5

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.16	32.69	0	24.79	316.3	.00	.00	1495.
5	12.26	32.67	5	24.75	320.2	.16	.00	1496.
10	12.05	32.64	10	24.78	318.2	.32	.02	1495.
15	11.67	32.66	15	24.86	310.5	.48	.04	1494.
20	11.51	32.67	20	24.89	307.3	.63	.06	1493.
25	10.95	32.70	25	25.02	295.7	.78	.10	1491.
30	8.81	32.57	30	25.27	271.5	.93	.14	1483.
35	7.02	32.82	35	25.72	228.4	1.05	.18	1477.
40	6.43	32.64	40	25.82	219.0	1.16	.22	1475.
45	5.99	32.65	45	25.86	213.5	1.27	.27	1473.
50	5.40	32.69	50	25.98	203.5	1.37	.32	1471.
55	5.12	32.90	55	26.02	199.9	1.47	.37	1470.
60	4.90	32.93	60	26.07	195.5	1.57	.43	1469.
65	4.74	32.93	65	26.09	194.0	1.67	.49	1468.
70	4.63	32.93	70	26.10	192.9	1.77	.50	1468.
75	4.54	32.94	75	26.12	191.2	1.86	.53	1468.
80	4.45	32.95	79	26.13	189.4	1.96	.71	1467.
90	4.33	32.99	89	26.17	185.7	2.14	.87	1467.
100	4.21	33.01	99	26.20	183.0	2.33	1.05	1467.
110	4.08	33.15	109	26.33	170.7	2.51	1.24	1467.
120	4.03	33.44	119	26.57	148.7	2.66	1.42	1467.
130	4.15	33.65	129	26.72	134.2	2.81	1.60	1468.
140	4.14	33.75	139	26.80	126.8	2.93	1.76	1468.
150	4.08	33.79	149	26.84	123.0	3.06	1.96	1468.
160	4.02	33.82	159	26.87	120.4	3.18	2.16	1468.
170	3.93	33.82	169	26.88	119.4	3.30	2.36	1468.
180	3.89	33.85	179	26.89	118.4	3.42	2.57	1468.
190	3.86	33.85	189	26.91	116.8	3.54	2.79	1468.
200	3.82	33.84	199	26.91	116.9	3.65	3.02	1468.
210	3.80	33.86	208	26.92	115.7	3.77	3.27	1468.
220	3.78	33.87	218	26.94	114.5	3.88	3.52	1468.
230	3.76	33.88	228	26.94	113.8	4.00	3.78	1468.
240	3.75	33.90	238	26.96	112.1	4.11	4.05	1468.
250	3.74	33.92	248	26.98	110.5	4.22	4.33	1468.
260	3.73	33.92	258	26.98	110.7	4.33	4.61	1468.
270	3.71	33.94	268	27.00	109.2	4.44	4.91	1469.
280	3.71	33.95	278	27.01	108.4	4.55	5.22	1469.
290	3.70	33.97	288	27.02	107.4	4.66	5.53	1469.
300	3.69	33.95	298	27.01	108.2	4.77	5.85	1469.





## OFFSHORE OCEANOGRAPHY GROUP

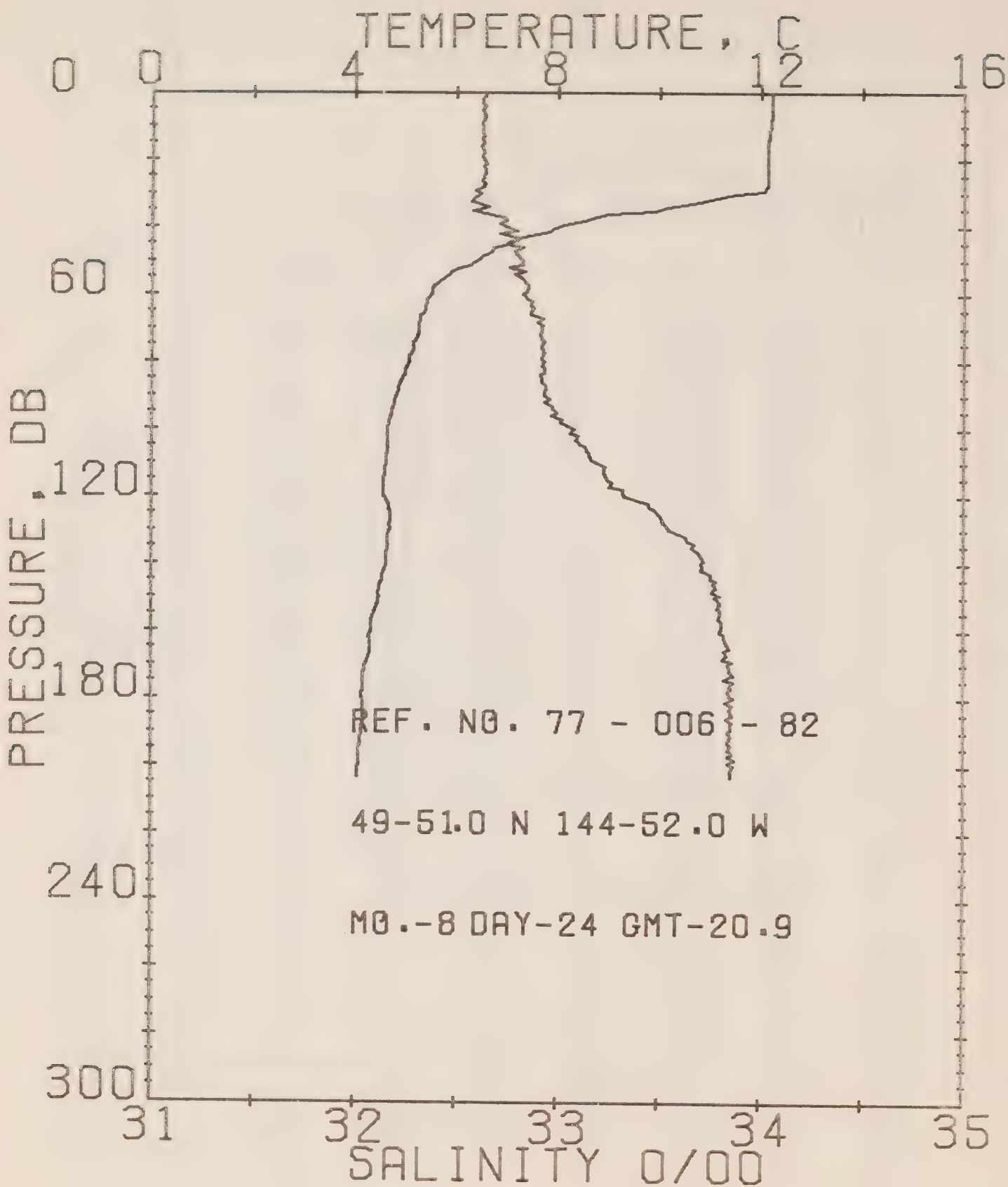
REFERENCE NO. 77- 3- 65

DATE 19/ 8/ 77

POSITION 50- .0N, 145-30.0W

GMT 22.5

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.48	32.64	0	24.69	326.0	.00	.00	1496.
5	12.39	32.63	5	24.70	325.4	.16	.00	1496.
10	11.62	32.63	10	24.81	315.1	.32	.02	1494.
15	11.69	32.62	15	24.82	314.2	.42	.04	1494.
20	11.46	32.64	20	24.86	308.2	.64	.06	1493.
25	11.20	32.66	25	24.94	302.8	.79	.10	1492.
30	9.98	32.72	30	25.20	278.0	.94	.14	1488.
35	8.18	32.61	35	25.55	244.6	1.06	.16	1481.
40	7.68	32.66	40	25.66	234.4	1.18	.20	1480.
45	7.61	32.63	45	25.73	227.5	1.30	.20	1477.
50	6.12	32.67	50	25.86	213.7	1.41	.30	1474.
55	5.77	32.90	55	25.95	207.2	1.51	.39	1472.
60	5.50	32.93	60	26.00	202.0	1.62	.45	1471.
65	5.32	32.90	65	26.00	202.0	1.72	.51	1471.
70	5.14	32.93	70	26.05	197.8	1.82	.56	1470.
75	5.05	32.93	75	26.06	196.9	1.92	.60	1470.
80	4.97	32.94	80	26.07	195.6	2.01	.70	1469.
90	4.82	32.95	89	26.10	192.9	2.21	.90	1469.
100	4.68	33.00	99	26.15	188.2	2.40	1.00	1469.
110	4.67	33.14	109	26.27	177.4	2.58	1.20	1469.
120	4.68	33.44	119	26.50	155.5	2.75	1.40	1470.
130	4.48	33.68	129	26.71	135.1	2.89	1.50	1469.
140	4.44	33.74	139	26.76	130.4	3.03	1.64	1469.
150	4.38	33.61	149	26.83	124.5	3.16	2.03	1469.
160	4.22	33.32	159	26.85	122.3	3.22	2.23	1469.
170	4.06	33.63	169	26.87	120.2	3.40	2.43	1468.
180	4.02	33.64	179	26.89	118.8	3.52	2.64	1468.
190	3.96	33.66	189	26.91	117.2	3.64	2.87	1468.
200	3.93	33.66	199	26.91	117.2	3.76	3.10	1468.
210	3.68	33.67	208	26.92	115.4	3.87	3.35	1468.
220	3.66	33.69	216	26.94	114.2	3.90	3.60	1468.
230	3.64	33.69	226	26.94	114.2	4.10	3.86	1468.
240	3.62	33.68	236	26.94	114.7	4.22	4.14	1468.
250	3.60	33.90	248	26.95	113.1	4.33	4.42	1469.
260	3.78	33.92	256	26.97	111.1	4.44	4.71	1469.
270	3.76	33.92	266	26.97	111.3	4.55	5.01	1469.
280	3.73	33.93	276	26.99	109.8	4.66	5.32	1469.
290	3.70	33.95	286	27.00	108.6	4.77	5.64	1469.
300	3.70	33.96	296	27.01	107.8	4.88	5.97	1469.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6- 82

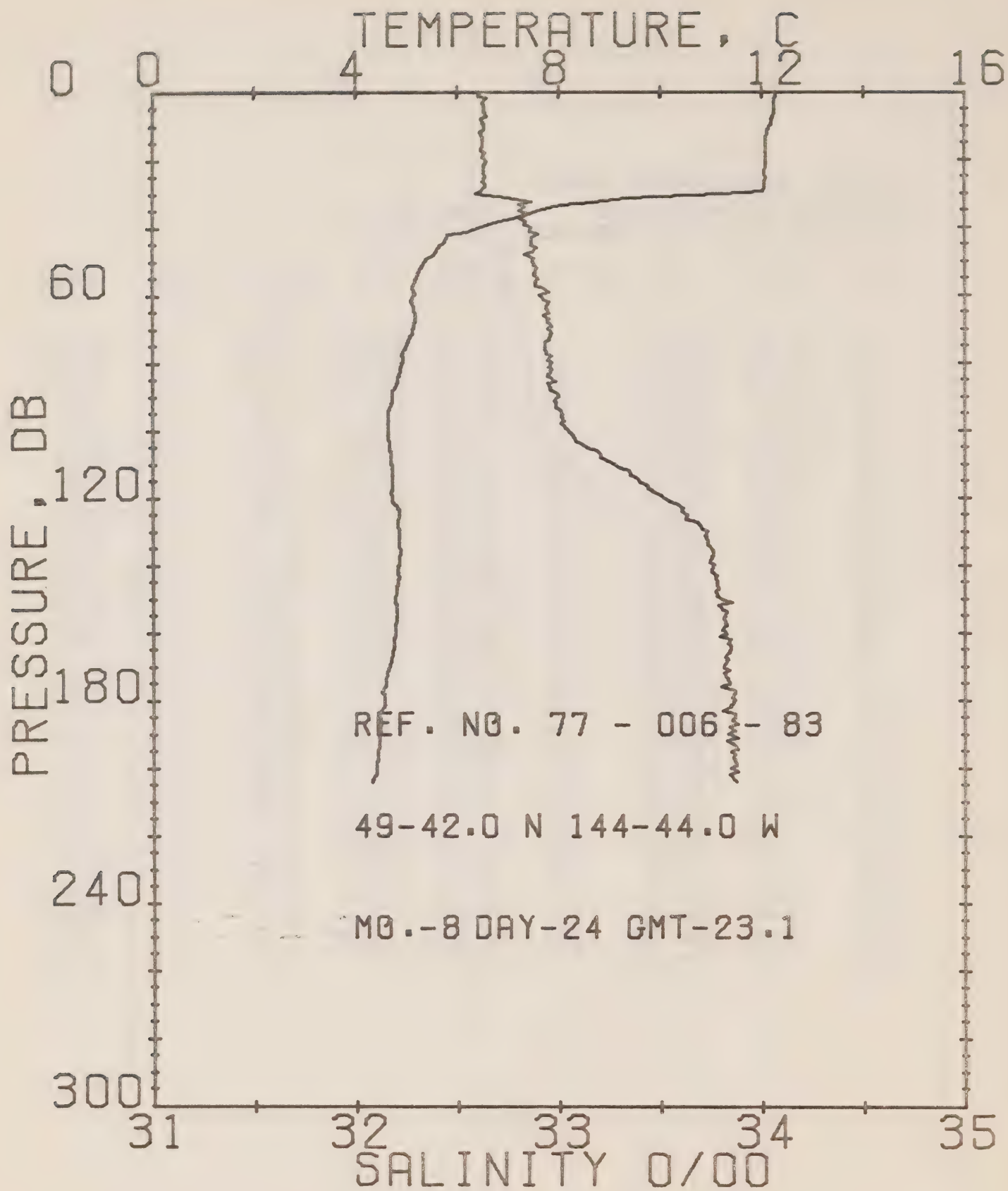
DATE 24/ 8/77

POSITION 49-51.0N, 144-52.0W

GMT 20.9

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.22	32.64	0	24.74	321.7	.00	.00	1495.
5	12.22	32.63	5	24.73	322.4	.16	.00	1495.
10	12.19	32.62	10	24.73	322.2	.32	.02	1495.
15	12.14	32.63	15	24.75	321.0	.48	.04	1495.
20	12.13	32.63	20	24.75	321.0	.64	.07	1495.
25	12.13	32.64	25	24.75	320.8	.80	.10	1495.
30	11.56	32.62	30	24.84	312.1	.96	.15	1493.
35	9.92	32.59	35	25.11	287.3	1.11	.20	1488.
40	7.94	32.74	40	25.54	246.3	1.24	.25	1480.
45	6.98	32.76	45	25.68	232.8	1.36	.30	1477.
50	6.38	32.83	50	25.81	220.0	1.47	.35	1475.
55	5.73	32.82	55	25.89	212.8	1.58	.41	1472.
60	5.49	32.83	60	25.93	209.1	1.69	.47	1471.
65	5.35	32.86	65	25.97	205.2	1.79	.54	1471.
70	5.24	32.92	70	26.02	200.1	1.89	.61	1470.
75	5.15	32.92	75	26.03	199.1	1.99	.68	1470.
80	5.06	32.93	80	26.06	197.0	2.09	.76	1470.
90	4.80	32.93	89	26.09	194.3	2.29	.93	1469.
100	4.65	33.08	99	26.22	182.0	2.48	1.11	1469.
110	4.61	33.19	109	26.31	173.4	2.65	1.30	1469.
120	4.58	33.32	119	26.42	163.0	2.82	1.50	1469.
130	4.66	33.55	129	26.59	147.1	2.97	1.69	1470.
140	4.60	33.71	139	26.72	134.8	3.11	1.88	1470.
150	4.46	33.78	149	26.79	128.0	3.24	2.08	1470.
160	4.30	33.80	159	26.83	124.7	3.37	2.28	1469.
170	4.20	33.84	169	26.87	120.5	3.49	2.48	1469.
180	4.15	33.86	179	26.89	118.6	3.61	2.69	1469.
190	4.12	33.84	189	26.87	120.3	3.73	2.92	1469.
200	4.06	33.86	199	26.90	118.0	3.85	3.16	1469.





## OFFSHORE OCEANOGRAPHY GROUP

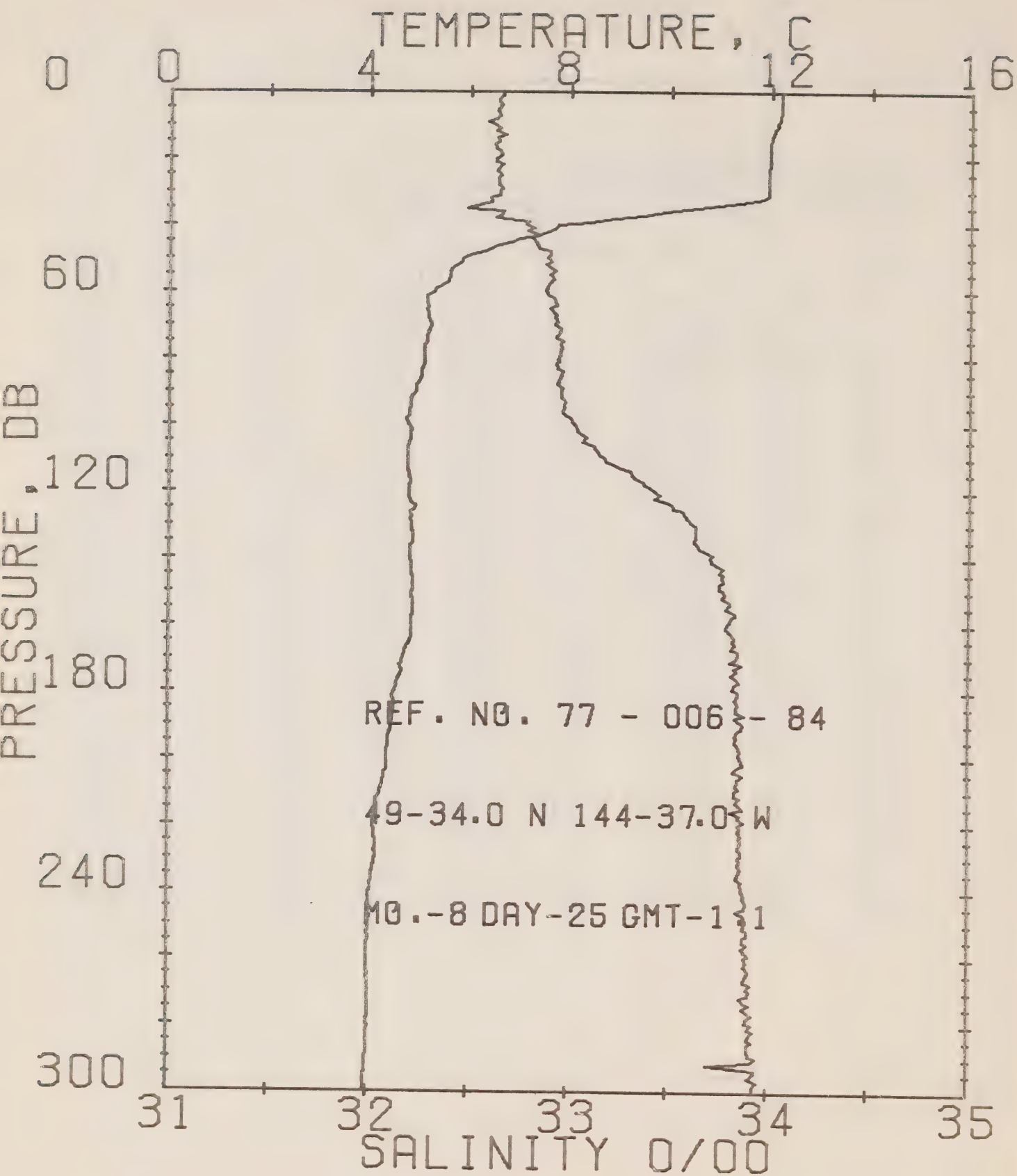
REFERENCE NO. 77- 6- 83

DATE 24/ 8/ 77

POSITION 49-42.0N, 144-44.0W

GMT 23.1

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.26	32.60	0	24.70	324.7	.00	.00	1495.
5	12.23	32.64	5	24.73	322.0	.16	.00	1495.
10	12.15	32.63	10	24.75	321.0	.32	.02	1495.
15	12.09	32.62	15	24.75	320.6	.48	.04	1495.
20	12.07	32.64	20	24.77	318.8	.64	.07	1495.
25	12.07	32.64	25	24.77	319.5	.80	.10	1495.
30	11.51	32.60	30	24.87	309.3	.96	.15	1493.
35	7.59	32.61	35	25.64	236.5	1.00	.19	1479.
40	6.41	32.66	40	25.84	217.6	1.20	.23	1475.
45	5.65	32.67	45	25.94	208.0	1.31	.26	1472.
50	5.35	32.67	50	25.98	204.3	1.41	.30	1470.
55	5.18	32.90	55	26.01	200.9	1.51	.33	1470.
60	5.16	32.91	60	26.03	199.5	1.61	.44	1470.
65	5.17	32.95	65	26.06	196.8	1.71	.50	1470.
70	5.13	32.95	70	26.06	196.4	1.81	.57	1470.
75	5.00	32.94	75	26.07	196.1	1.91	.64	1469.
80	4.92	32.97	80	26.10	192.9	2.01	.72	1469.
90	4.71	33.00	89	26.15	188.3	2.20	.89	1469.
100	4.64	33.05	99	26.19	184.1	2.30	1.07	1469.
110	4.72	33.27	109	26.36	168.6	2.56	1.26	1469.
120	4.73	33.52	119	26.56	149.9	2.72	1.44	1470.
130	4.65	33.74	129	26.71	135.2	2.86	1.60	1471.
140	4.63	33.76	139	26.74	133.0	3.00	1.81	1471.
150	4.78	33.80	149	26.77	129.6	3.13	2.01	1471.
160	4.77	33.82	159	26.79	128.1	3.26	2.21	1471.
170	4.64	33.82	169	26.80	127.2	3.39	2.42	1471.
180	4.56	33.86	179	26.85	122.9	3.51	2.65	1471.
190	4.46	33.84	189	26.84	123.7	3.63	2.88	1470.
200	4.59	33.85	199	26.85	122.5	3.76	3.12	1470.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8- 84

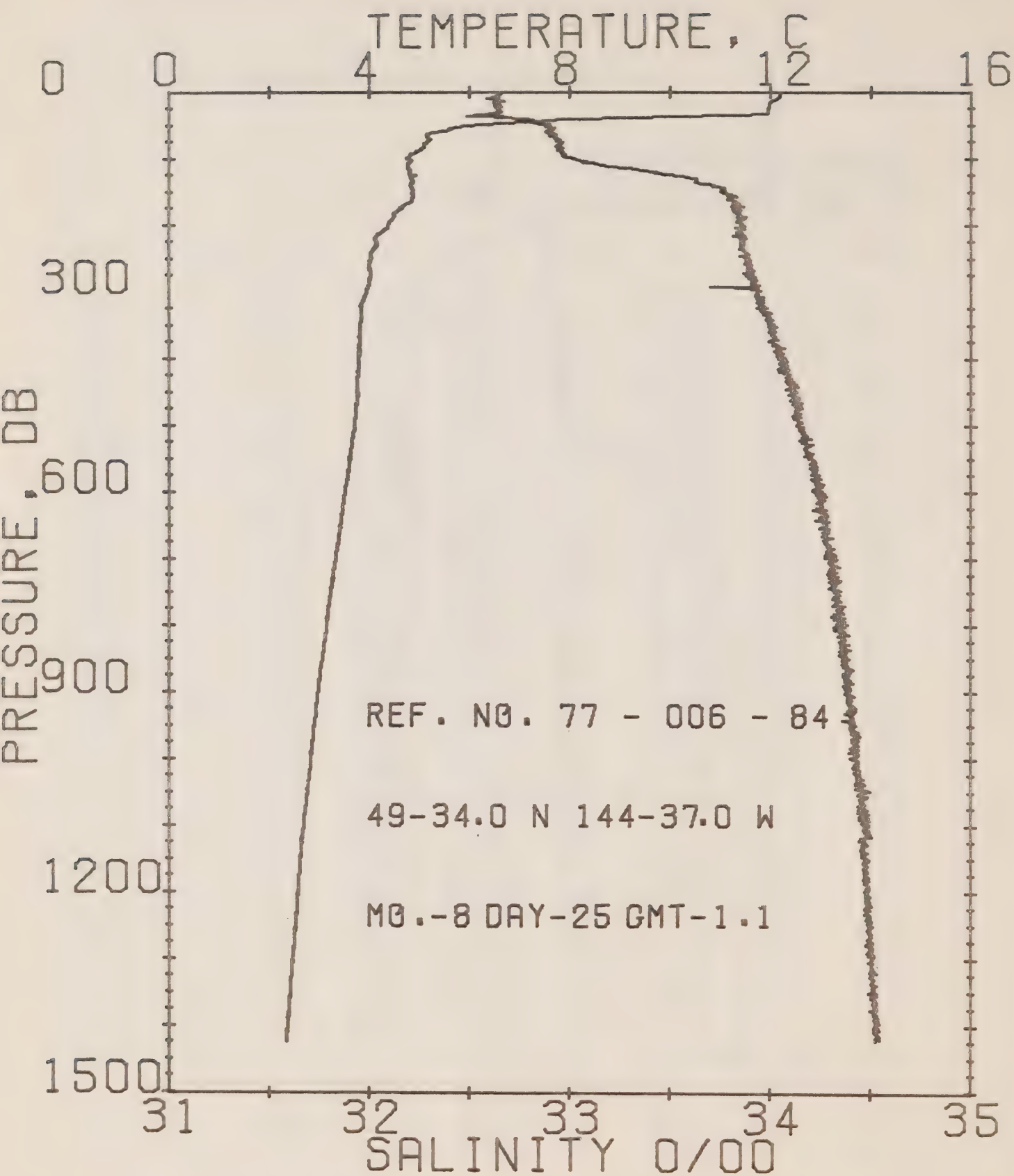
DATE 25/ 8/77

POSITION 49-34.0N, 144-37.0W

GMT 1.1

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.19	32.86	0	24.76	319.5	.00	.00	1495.
5	12.20	32.84	5	24.74	321.3	.16	.00	1495.
10	12.12	32.82	10	24.74	321.7	.32	.02	1495.
15	11.99	32.84	15	24.78	317.7	.48	.04	1495.
20	11.97	32.83	20	24.78	317.8	.64	.07	1495.
25	11.95	32.85	25	24.80	316.3	.80	.10	1495.
30	11.95	32.85	30	24.80	316.5	.96	.15	1495.
35	10.57	32.49	35	24.96	301.3	1.11	.20	1489.
40	7.83	32.78	40	25.58	242.0	1.25	.25	1480.
45	8.85	32.82	45	25.75	226.2	1.36	.30	1478.
50	5.88	32.89	50	25.92	209.3	1.47	.35	1473.
55	5.81	32.91	55	25.97	205.0	1.58	.41	1472.
60	5.27	32.88	60	25.99	203.2	1.68	.47	1470.
65	5.16	32.90	65	26.02	200.5	1.78	.53	1470.
70	5.21	32.93	70	26.03	199.1	1.88	.60	1470.
75	5.14	32.97	75	26.07	195.5	1.97	.67	1470.
80	5.10	32.94	80	26.06	196.9	2.07	.75	1478.
90	4.92	32.96	89	26.10	193.4	2.27	.92	1469.
100	4.79	33.02	99	26.16	187.6	2.46	1.10	1469.
110	4.77	33.17	109	26.28	176.3	2.64	1.30	1469.
120	4.80	33.42	119	26.47	157.8	2.81	1.49	1470.
130	4.86	33.83	129	26.63	143.5	2.96	1.69	1471.
140	4.84	33.70	139	26.69	137.4	3.10	1.88	1471.
150	4.86	33.77	149	26.74	132.7	3.24	2.06	1471.
160	4.86	33.80	159	26.76	131.0	3.37	2.29	1471.
170	4.88	33.84	169	26.81	126.0	3.49	2.50	1471.
180	4.82	33.84	179	26.84	124.0	3.62	2.73	1470.
190	4.45	33.87	189	26.87	121.2	3.74	2.96	1470.
200	4.37	33.88	199	26.86	121.4	3.87	3.20	1470.
210	4.24	33.84	209	26.86	121.8	3.99	3.48	1470.
220	4.12	33.86	218	26.89	119.3	4.11	3.72	1469.
230	4.14	33.86	228	26.88	119.5	4.23	3.95	1478.
240	4.04	33.87	238	26.91	117.2	4.35	4.28	1469.
250	4.03	33.89	248	26.92	116.2	4.46	4.57	1470.
260	4.01	33.89	258	26.92	116.1	4.58	4.87	1470.
270	4.02	33.92	268	26.95	114.1	4.69	5.18	1470.
280	4.01	33.92	278	26.95	113.9	4.81	5.50	1470.
290	3.98	33.94	288	26.97	112.1	4.92	5.85	1470.
300	3.94	33.93	298	26.97	112.4	5.04	6.18	1470.





## OFFSHORE OCEANOGRAPHY GROUP

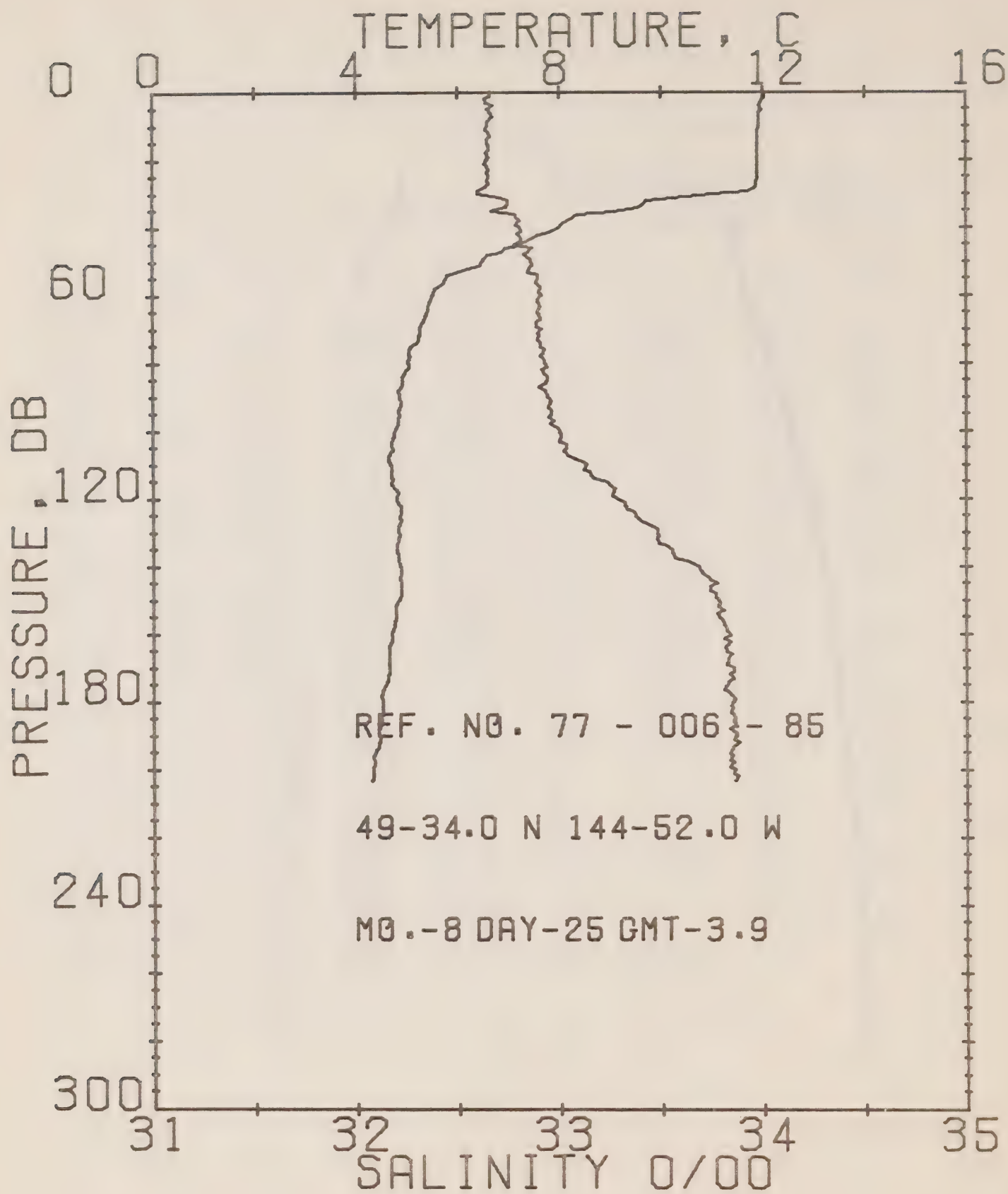
REFERENCE NO. 77- 8- 84

DATE 25/ 8/77

POSITION 49-34.0N, 144-37.0W

GMT 1.1

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA S	POT. EN	SOUND
0	12.19	32.88	0	24.76	319.5	.00	.00	1495.
50	5.88	32.89	50	25.92	209.3	1.47	.35	1475.
100	4.79	33.02	99	26.16	187.5	2.46	1.16	1469.
150	4.86	33.77	149	26.74	132.7	3.24	2.08	1471.
200	4.57	33.88	199	26.88	121.4	3.87	3.20	1470.
250	4.03	33.89	248	26.92	116.2	4.46	4.57	1470.
300	3.94	33.93	298	26.97	112.4	5.04	5.18	1470.
350	3.81	34.01	347	27.04	105.6	5.58	7.98	1470.
400	3.79	34.07	397	27.09	101.0	6.10	9.97	1471.
450	3.77	34.12	446	27.13	97.0	6.60	12.14	1472.
500	3.71	34.14	496	27.15	96.2	7.02	14.48	1473.
550	3.61	34.20	545	27.21	91.2	7.55	16.96	1475.
600	3.51	34.25	595	27.24	88.2	7.99	19.55	1474.
650	3.42	34.28	644	27.29	83.7	8.42	22.28	1474.
700	3.33	34.33	694	27.34	79.2	8.83	25.15	1475.
750	3.23	34.34	743	27.36	77.7	9.23	28.08	1475.
800	3.15	34.34	793	27.37	77.3	9.62	31.14	1475.
850	3.06	34.39	842	27.42	72.9	10.00	34.36	1475.
900	2.97	34.39	892	27.43	72.2	10.36	37.50	1476.
950	2.90	34.41	941	27.44	70.6	10.72	40.92	1477.
1000	2.82	34.41	990	27.45	69.7	11.07	44.58	1477.
1050	2.76	34.47	1040	27.50	65.4	11.40	47.88	1475.
1100	2.68	34.49	1089	27.53	63.4	11.73	51.45	1479.
1150	2.62	34.47	1138	27.52	64.0	12.05	55.12	1479.
1200	2.57	34.48	1186	27.55	62.6	12.36	58.91	1480.
1250	2.52	34.51	1237	27.56	60.7	12.69	62.80	1480.
1300	2.47	34.50	1286	27.56	60.6	12.98	66.77	1481.
1350	2.42	34.53	1336	27.58	59.0	13.28	70.82	1482.
1400	2.37	34.55	1385	27.59	58.4	13.58	74.94	1482.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8- 85

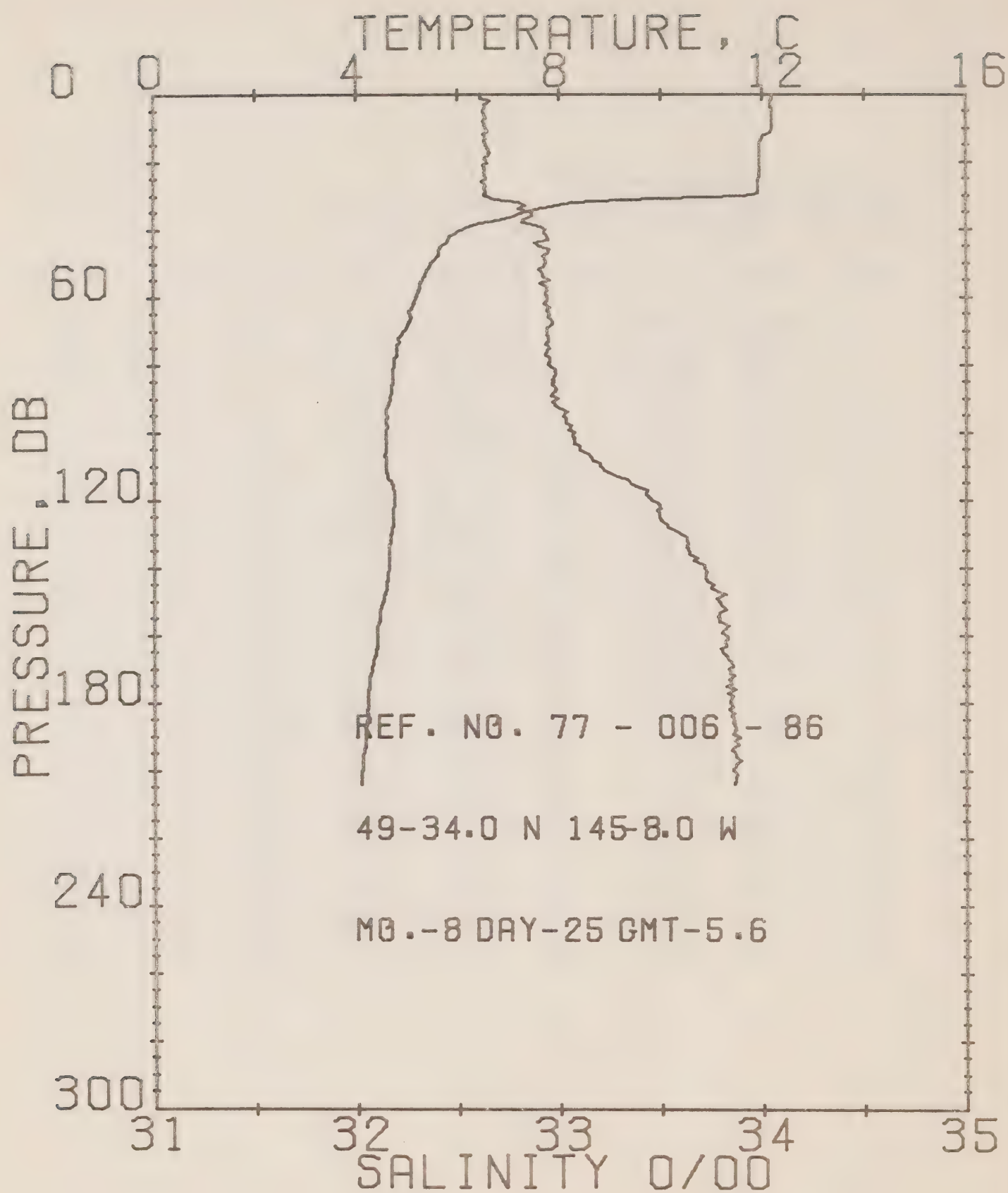
DATE 25/ 8/77

POSITION 49-34.0N, 144-52.0W

GMT 3.9

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA S	POT. EN	SOUND
0	12.81	32.88	0	24.79	316.4	.00	.00	1495.
5	11.97	32.85	5	24.80	316.2	.16	.00	1494.
10	11.91	32.85	10	24.81	315.5	.32	.02	1494.
15	11.89	32.85	15	24.81	315.2	.47	.04	1494.
20	11.90	32.85	20	24.81	315.7	.63	.06	1494.
25	11.89	32.85	25	24.81	315.1	.79	.10	1495.
30	11.82	32.80	30	24.93	304.2	.95	.14	1491.
35	9.14	32.88	35	25.30	268.4	1.08	.19	1485.
40	7.97	32.80	40	25.58	242.3	1.21	.24	1481.
45	7.22	32.78	45	25.67	233.9	1.33	.29	1475.
50	6.49	32.80	50	25.82	218.9	1.44	.34	1475.
55	5.76	32.89	55	25.94	207.7	1.55	.40	1472.
60	5.49	32.91	60	25.99	203.4	1.65	.46	1471.
65	5.58	32.90	65	25.99	203.2	1.75	.53	1471.
70	5.26	32.91	70	26.01	201.1	1.85	.59	1470.
75	5.09	32.91	75	26.03	199.4	1.95	.67	1470.
80	5.05	32.92	80	26.05	197.0	2.05	.75	1470.
90	4.87	32.94	89	26.06	194.6	2.25	.92	1469.
100	4.76	33.00	99	26.14	189.3	2.40	1.10	1469.
110	4.69	33.13	109	26.26	178.3	2.62	1.30	1469.
120	4.61	33.28	119	26.36	168.9	2.80	1.51	1470.
130	4.64	33.48	129	26.51	154.3	2.96	1.71	1470.
140	4.68	33.68	139	26.67	139.8	3.11	1.92	1471.
150	4.64	33.78	149	26.75	132.2	3.24	2.12	1471.
160	4.69	33.83	159	26.81	126.3	3.37	2.32	1471.
170	4.64	33.85	169	26.83	124.6	3.50	2.53	1471.
180	4.50	33.85	179	26.85	122.9	3.63	2.76	1470.
190	4.44	33.86	189	26.86	121.6	3.75	2.99	1470.
200	4.32	33.86	199	26.87	121.2	3.87	3.20	1470.





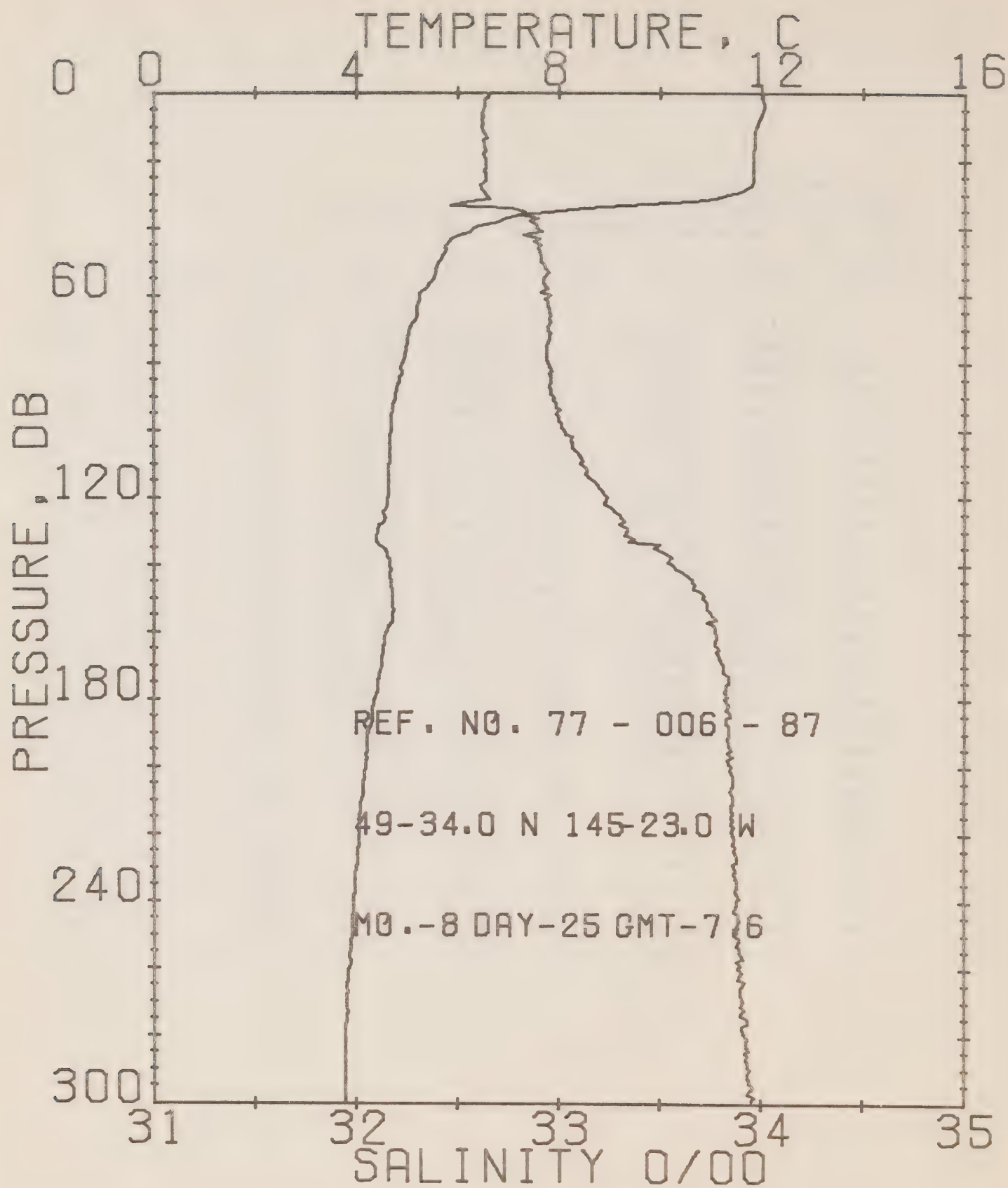
## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8- 86

DATE 25/ 8/77

POSITION 49-34.0N, 145- 8.0W GMT 5.6

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.18	32.81	0	24.73	322.8	.00	.00	1495.
5	12.18	32.83	5	24.74	321.7	.16	.00	1495.
10	12.20	32.84	10	24.75	321.1	.32	.02	1495.
15	11.95	32.84	15	24.79	317.0	.48	.04	1495.
20	11.94	32.84	20	24.80	316.7	.64	.06	1495.
25	11.93	32.84	25	24.79	316.9	.80	.10	1495.
30	11.64	32.83	30	24.84	312.3	.96	.15	1494.
35	7.26	32.86	35	25.72	228.2	1.08	.19	1478.
40	5.67	32.93	40	25.94	208.1	1.10	.23	1473.
45	5.67	32.91	45	25.96	205.4	1.30	.27	1472.
50	5.48	32.93	50	26.01	201.5	1.40	.32	1471.
55	5.30	32.95	55	26.04	198.0	1.50	.36	1470.
60	5.17	32.94	60	26.05	197.6	1.60	.44	1470.
65	5.08	32.95	65	26.07	195.8	1.70	.50	1470.
70	4.94	32.94	70	26.08	194.9	1.70	.57	1469.
75	4.80	32.95	75	26.10	192.8	1.80	.64	1469.
80	4.74	32.95	80	26.11	192.3	1.90	.71	1468.
90	4.60	32.99	89	26.14	188.6	2.10	.80	1468.
100	4.58	33.07	99	26.21	182.0	2.36	1.00	1468.
110	4.58	33.20	109	26.32	172.2	2.54	1.25	1469.
120	4.74	33.45	119	26.50	154.9	2.70	1.44	1470.
130	4.67	33.59	129	26.62	144.0	2.86	1.63	1470.
140	4.64	33.72	139	26.72	134.5	2.99	1.82	1470.
150	4.51	33.76	149	26.79	128.0	3.13	2.02	1470.
160	4.40	33.82	159	26.85	124.1	3.25	2.22	1470.
170	4.29	33.84	169	26.86	121.8	3.38	2.42	1469.
180	4.20	33.84	179	26.87	121.1	3.50	2.64	1469.
190	4.16	33.86	189	26.90	117.8	3.62	2.87	1469.
200	4.09	33.86	199	26.89	118.9	3.73	3.10	1469.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 5- 87

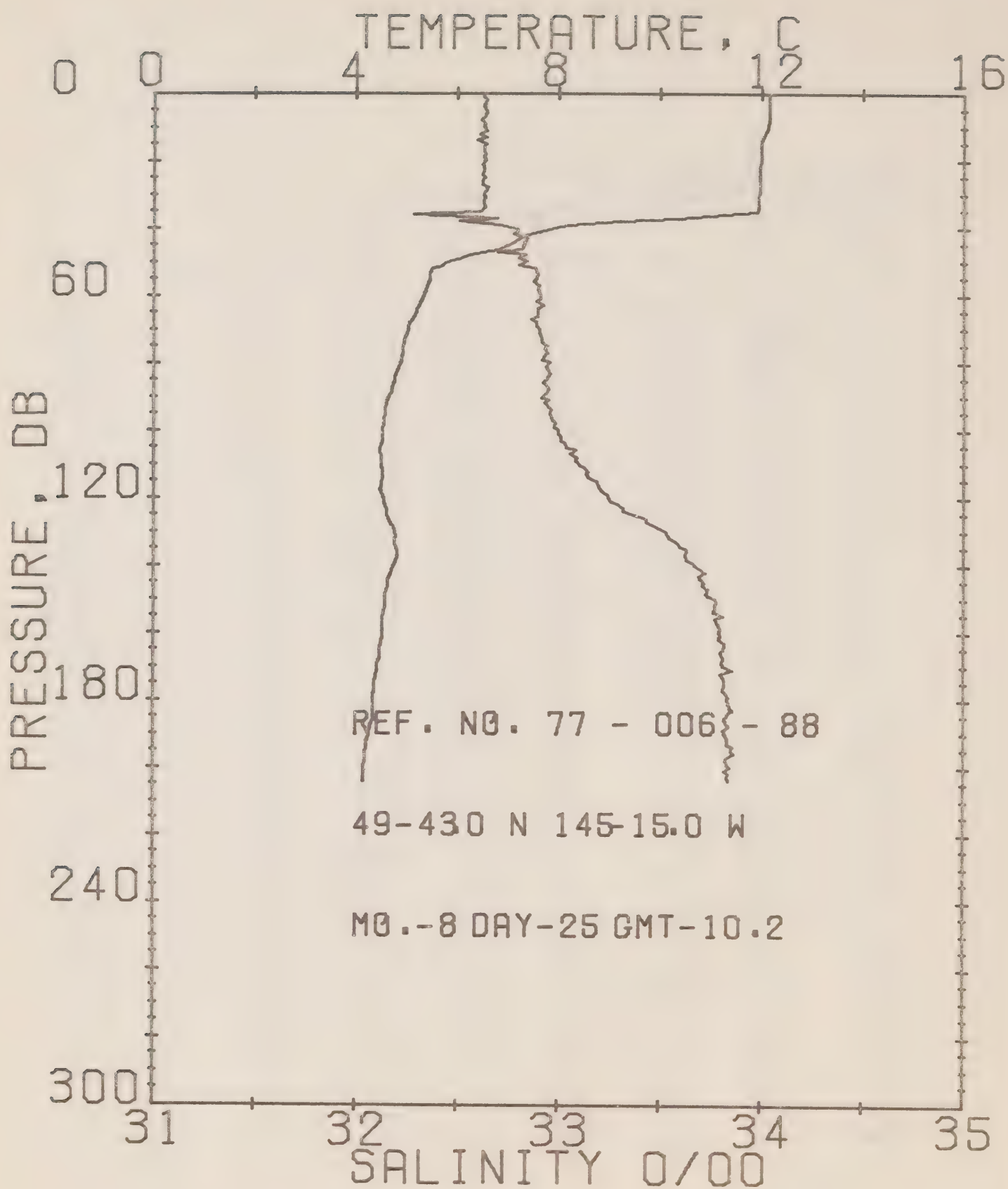
DATE 25/ 8/ 77

POSITION 49-34.0N, 145-23.0W

GMI 7.6

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.04	32.05	0	24.78	317.2	.00	.00	1495.
5	12.04	32.03	5	24.77	319.2	.16	.00	1495.
10	11.89	32.02	10	24.79	317.3	.32	.02	1494.
15	11.86	32.03	15	24.80	315.9	.48	.04	1494.
20	11.85	32.04	20	24.81	315.5	.63	.06	1494.
25	11.85	32.04	25	24.81	315.5	.79	.10	1494.
30	11.84	32.04	30	24.90	306.8	.95	.14	1493.
35	7.96	32.02	35	25.59	241.2	1.09	.19	1481.
40	5.52	32.09	40	25.87	214.2	1.20	.25	1474.
45	5.78	32.91	45	25.95	206.5	1.31	.28	1472.
50	5.03	32.91	50	25.97	204.5	1.41	.35	1472.
55	5.53	32.93	55	26.00	202.5	1.51	.38	1471.
60	5.25	32.95	60	26.05	197.7	1.61	.44	1470.
65	5.21	32.95	65	26.06	196.9	1.71	.51	1470.
70	5.00	32.95	70	26.07	195.9	1.81	.57	1470.
75	5.00	32.94	75	26.07	195.7	1.91	.65	1469.
80	4.91	32.95	80	26.09	194.2	2.00	.72	1469.
90	4.76	32.97	89	26.12	190.9	2.20	.89	1469.
100	4.68	33.02	99	26.17	186.5	2.39	1.07	1469.
110	4.65	33.11	109	26.24	179.7	2.57	1.27	1469.
120	4.62	33.24	119	26.35	169.9	2.74	1.47	1469.
130	4.43	33.34	129	26.45	160.3	2.91	1.66	1469.
140	4.68	33.56	139	26.59	146.7	3.06	1.83	1470.
150	4.72	33.71	149	26.71	135.7	3.20	2.10	1471.
160	4.59	33.77	159	26.77	130.0	3.33	2.31	1470.
170	4.49	33.51	169	26.82	125.9	3.46	2.55	1470.
180	4.36	33.32	179	26.84	123.9	3.59	2.75	1470.
190	4.22	33.04	189	26.86	121.3	3.71	2.98	1469.
200	4.18	33.33	199	26.88	120.2	3.83	3.22	1469.
210	4.10	33.66	209	26.89	118.8	3.95	3.47	1469.
220	4.05	33.66	215	26.90	118.1	4.07	3.75	1469.
230	3.99	33.57	225	26.91	117.2	4.19	4.06	1469.
240	3.95	33.68	238	26.92	115.9	4.30	4.28	1469.
250	3.92	33.57	246	26.92	116.6	4.42	4.56	1469.
260	3.85	33.69	255	26.94	114.2	4.53	4.80	1469.
270	3.82	33.91	265	26.96	112.3	4.65	5.17	1469.
280	3.79	33.93	278	26.98	111.2	4.76	5.46	1469.
290	3.78	33.94	286	26.99	109.9	4.87	5.80	1469.
300	3.78	33.95	296	26.99	109.8	4.98	6.13	1469.





## OFFSHORE OCEANOGRAPHY GROUP

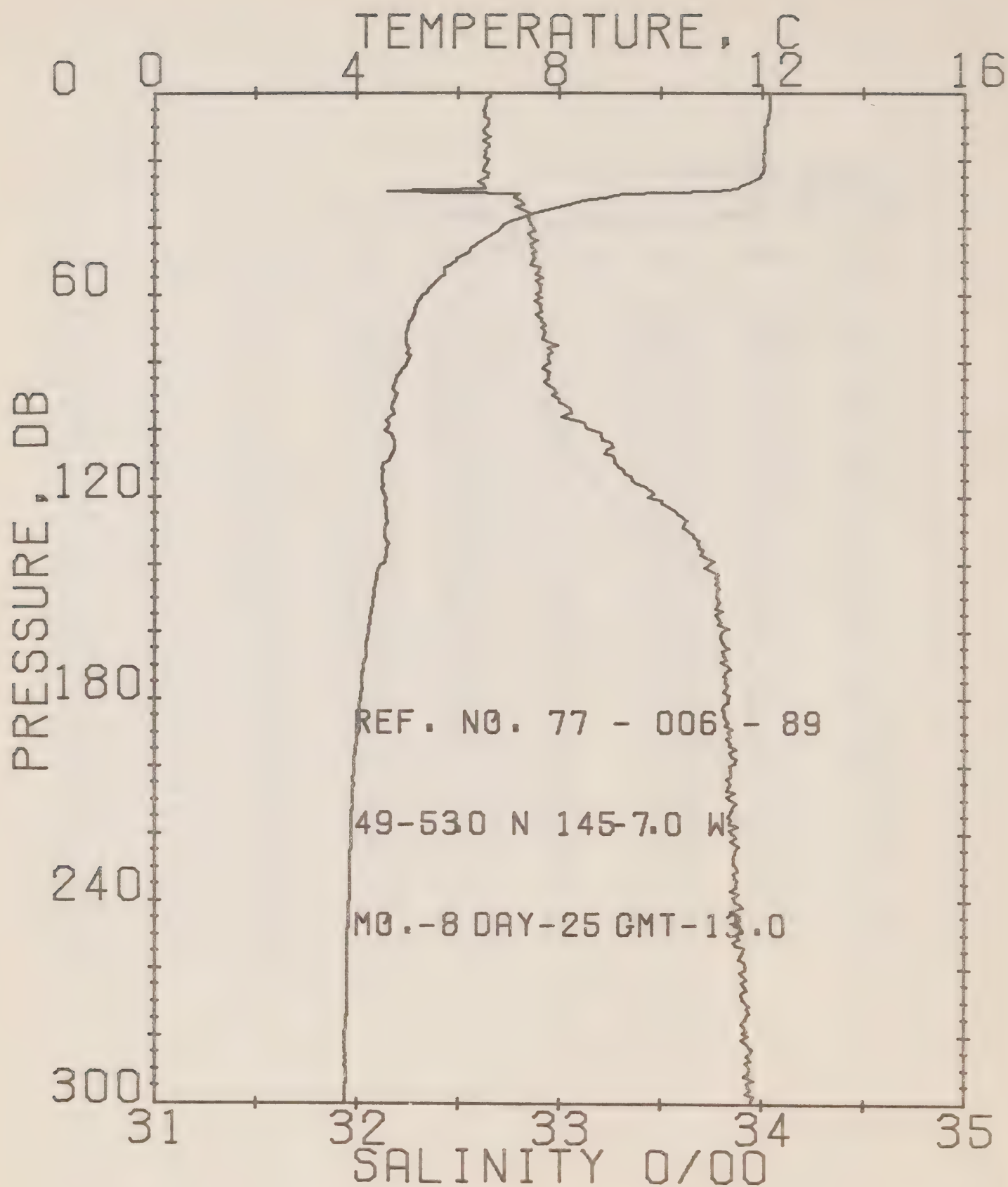
REFERENCE NO. 77- 8- 88

DATE 25/ 8/77

POSITION 49-45.0N, 145-15.0W

GMT 10.2

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.17	32.83	0	24.74	320.9	.00	.00	1495.
5	12.16	32.83	5	24.76	319.9	.16	.00	1495.
10	12.13	32.83	10	24.75	320.6	.32	.02	1495.
15	12.00	32.84	15	24.76	317.6	.48	.04	1495.
20	11.99	32.84	20	24.78	317.8	.64	.07	1495.
25	11.97	32.84	25	24.78	317.8	.80	.10	1495.
30	11.96	32.84	30	24.79	317.7	.96	.15	1495.
35	11.91	32.82	35	24.76	318.1	1.12	.20	1495.
40	7.91	32.78	40	25.57	243.4	1.26	.25	1480.
45	7.80	32.83	45	25.74	227.2	1.38	.30	1477.
50	5.82	32.85	50	25.90	211.7	1.49	.36	1472.
55	5.46	32.89	55	25.96	204.0	1.59	.41	1471.
60	5.34	32.91	60	26.01	201.6	1.69	.47	1471.
65	5.19	32.90	65	26.01	200.9	1.79	.54	1470.
70	5.03	32.91	70	26.04	198.5	1.89	.61	1469.
75	4.95	32.94	75	26.08	195.2	1.99	.68	1469.
80	4.87	32.96	80	26.10	193.1	2.09	.75	1469.
85	4.85	32.95	85	26.10	193.3	2.20	.92	1468.
100	4.54	33.00	99	26.16	186.8	2.47	1.11	1468.
110	4.52	33.10	109	26.25	178.9	2.66	1.30	1468.
120	4.56	33.24	119	26.36	168.6	2.83	1.51	1469.
130	4.77	33.33	129	26.56	150.1	2.90	1.71	1470.
140	4.75	33.67	139	26.67	139.1	3.13	1.91	1470.
150	4.58	33.77	149	26.77	129.9	3.27	2.11	1470.
160	4.52	33.80	159	26.80	127.4	3.40	2.31	1470.
170	4.42	33.81	169	26.82	125.3	3.52	2.52	1470.
180	4.36	33.84	179	26.85	122.8	3.65	2.74	1470.
190	4.27	33.82	189	26.84	123.5	3.77	2.97	1470.
200	4.18	33.85	199	26.86	120.2	3.89	3.22	1469.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 5- 89

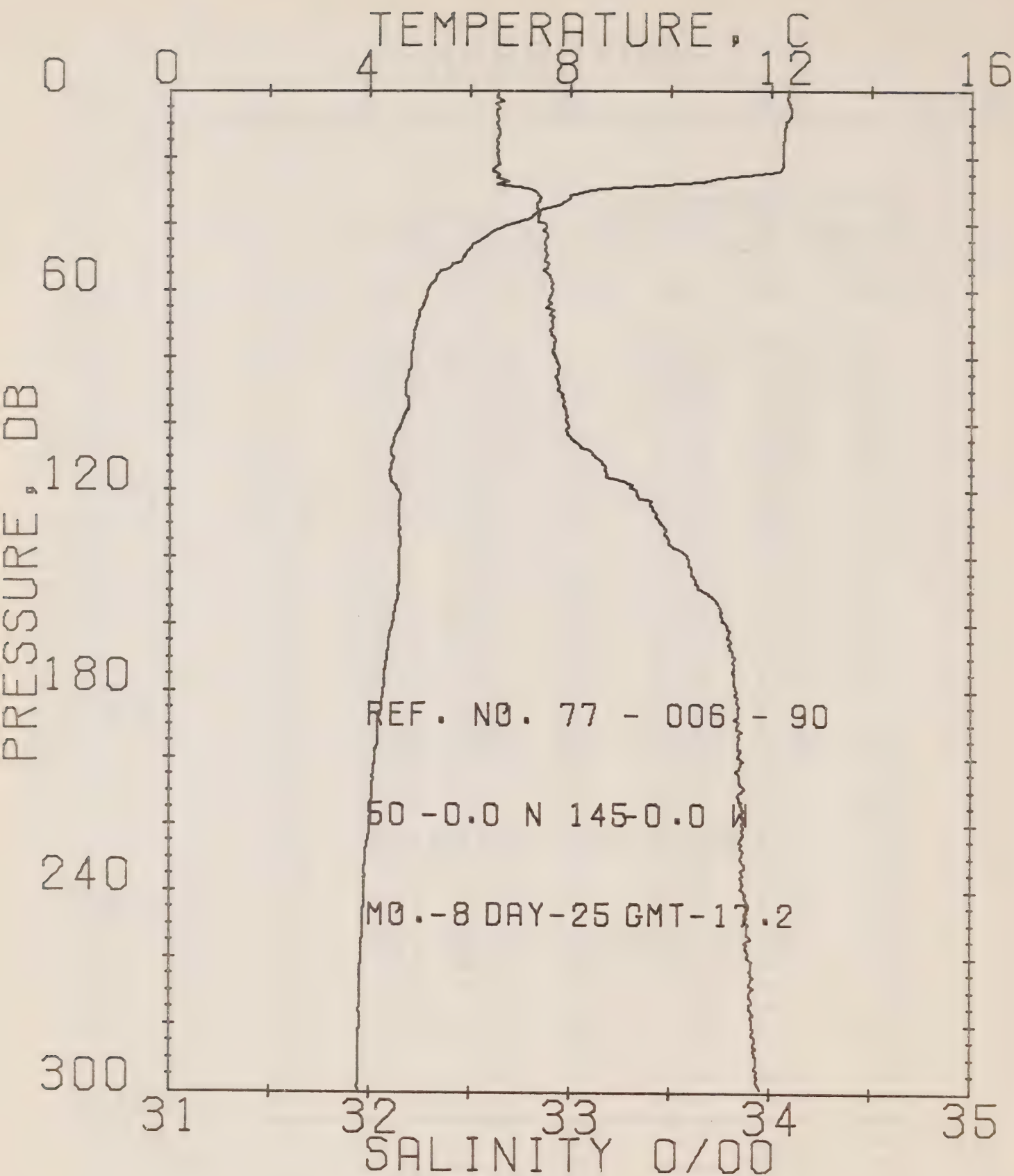
DATE 25/ 8/77

POSITION 49-55.0N, 145- 7.0W

GMT 13.0

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.16	32.86	0	24.77	318.7	.00	.00	1495.
5	12.15	32.86	5	24.74	321.0	.16	.00	1495.
10	12.07	32.84	10	24.77	318.5	.32	.02	1495.
15	12.05	32.85	15	24.76	317.6	.48	.04	1495.
20	12.04	32.85	20	24.76	317.9	.64	.07	1495.
25	11.94	32.84	25	24.80	316.7	.80	.10	1495.
30	9.54	32.77	30	25.35	264.4	.95	.15	1486.
35	7.71	32.82	35	25.65	237.0	1.08	.19	1480.
40	6.85	32.87	40	25.79	222.2	1.10	.25	1476.
45	6.54	32.86	45	25.85	216.7	1.30	.28	1474.
50	5.94	32.87	50	25.90	211.2	1.41	.35	1475.
55	5.88	32.91	55	25.97	205.3	1.51	.39	1472.
60	5.51	32.89	60	25.99	202.9	1.61	.44	1470.
65	5.14	32.91	65	26.03	199.4	1.72	.51	1470.
70	5.01	32.92	70	26.05	197.7	1.81	.56	1469.
75	5.01	32.93	75	26.10	193.0	1.91	.65	1470.
80	4.99	32.95	80	26.06	195.0	2.01	.75	1470.
90	4.78	32.97	89	26.12	191.5	2.20	.89	1469.
100	4.58	33.15	99	26.26	175.9	2.39	1.07	1468.
110	4.55	33.27	109	26.36	166.6	2.56	1.25	1469.
120	4.58	33.45	119	26.51	154.0	2.72	1.44	1469.
130	4.58	33.65	129	26.66	139.6	2.86	1.65	1469.
140	4.49	33.75	139	26.76	130.5	3.00	1.81	1470.
150	4.53	33.78	149	26.81	126.4	3.12	2.00	1469.
160	4.24	33.81	159	26.84	123.3	3.25	2.20	1469.
170	4.13	33.82	169	26.86	121.2	3.37	2.40	1469.
180	4.07	33.84	179	26.88	119.8	3.49	2.62	1469.
190	4.02	33.85	189	26.88	119.8	3.61	2.85	1468.
200	3.94	33.85	199	26.96	117.9	3.73	3.06	1468.
210	3.92	33.85	205	26.90	117.8	3.85	3.30	1468.
220	3.90	33.85	215	26.91	117.3	3.97	3.56	1468.
230	3.87	33.87	225	26.95	115.4	4.08	3.85	1469.
240	3.85	33.87	235	26.95	115.4	4.20	4.15	1469.
250	3.82	33.88	245	26.94	114.8	4.31	4.41	1469.
260	3.82	33.92	255	26.97	111.7	4.43	4.71	1469.
270	3.81	33.92	265	26.97	111.5	4.54	5.01	1469.
280	3.77	33.93	275	26.98	110.6	4.65	5.32	1469.
290	3.77	33.94	285	26.99	109.8	4.76	5.65	1469.
300	3.77	33.96	295	27.01	108.5	4.87	5.98	1469.





## OFFSHORE OCEANOGRAPHY GROUP

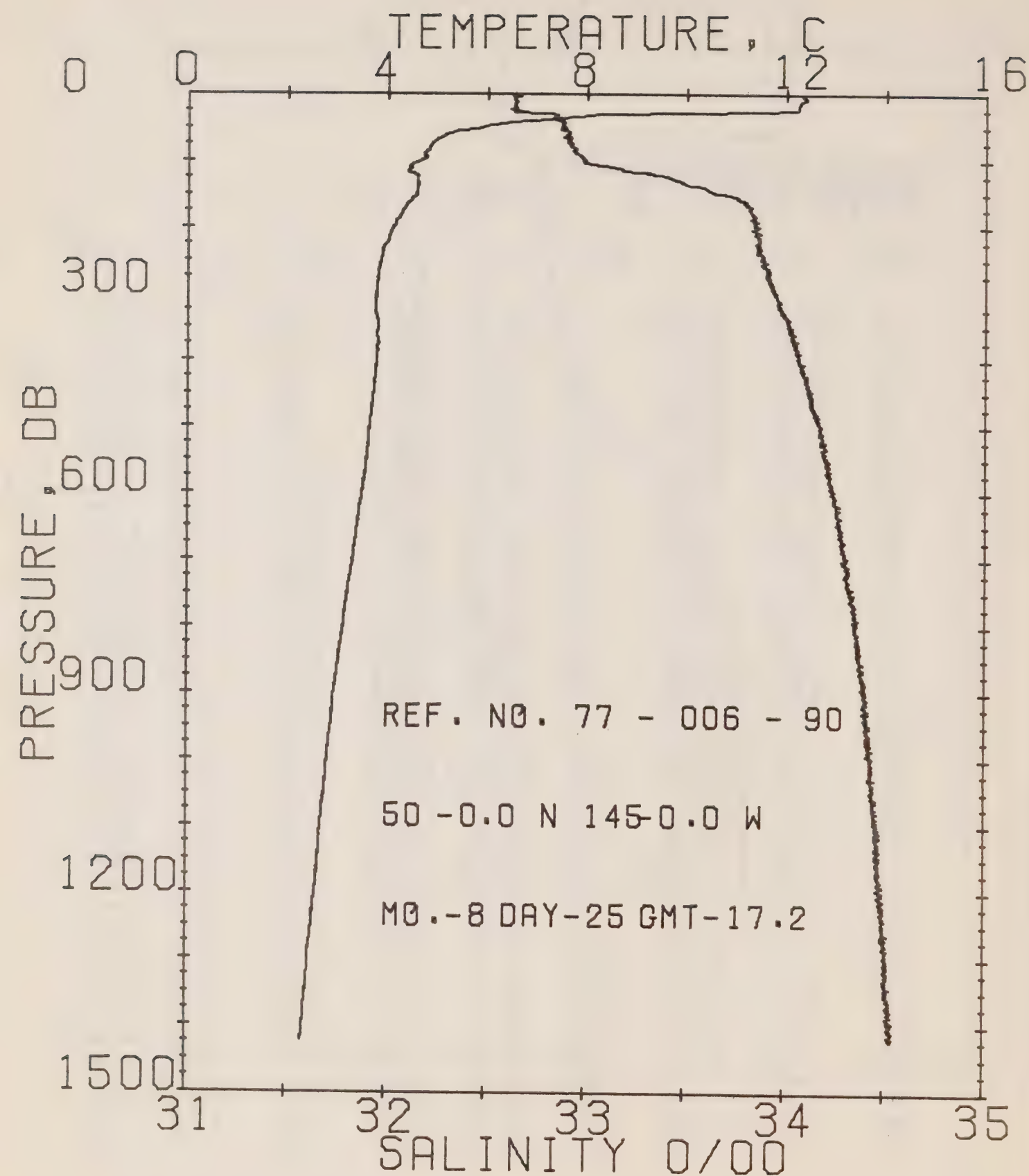
REFERENCE NO. 77- 6- 90

DATE 25/ 8/77

POSITION 50- .0N, 145- .0W

GMT 17.2

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.34	32.64	0	24.72	323.5	.00	.00	1496.
5	12.39	32.65	5	24.71	324.2	.16	.00	1496.
10	12.28	32.63	10	24.72	323.6	.32	.02	1496.
15	12.25	32.64	15	24.73	322.6	.49	.04	1496.
20	12.24	32.64	20	24.73	322.6	.65	.07	1496.
25	11.51	32.65	25	24.88	308.9	.81	.10	1493.
30	8.32	32.82	30	25.54	246.0	.95	.14	1482.
35	7.50	32.83	35	25.67	233.8	1.07	.18	1479.
40	6.75	32.88	40	25.81	220.6	1.18	.23	1476.
45	6.17	32.88	45	25.88	213.6	1.29	.27	1474.
50	5.86	32.88	50	25.92	209.7	1.40	.32	1473.
55	5.35	32.89	55	25.99	203.4	1.50	.38	1471.
60	5.14	32.91	60	26.03	199.4	1.60	.44	1470.
65	5.03	32.88	65	26.02	200.4	1.70	.50	1469.
70	4.93	32.92	70	26.06	196.9	1.80	.57	1469.
75	4.86	32.92	75	26.07	195.5	1.90	.64	1469.
80	4.82	32.92	80	26.08	195.2	1.99	.72	1469.
90	4.72	32.94	89	26.10	192.7	2.19	.89	1469.
100	4.62	32.99	99	26.15	188.3	2.38	1.07	1468.
110	4.47	33.13	109	26.28	176.4	2.56	1.27	1468.
120	4.58	33.33	119	26.42	162.5	2.73	1.47	1469.
130	4.60	33.45	129	26.52	153.4	2.89	1.67	1469.
140	4.58	33.59	139	26.62	143.5	3.04	1.87	1470.
150	4.57	33.67	149	26.70	136.9	3.18	2.08	1470.
160	4.44	33.78	159	26.80	127.4	3.31	2.29	1470.
170	4.34	33.82	169	26.84	123.4	3.44	2.50	1469.
180	4.27	33.83	179	26.85	122.2	3.56	2.72	1469.
190	4.16	33.84	189	26.87	120.9	3.68	2.95	1469.
200	4.11	33.85	199	26.88	119.3	3.80	3.19	1469.
210	4.05	33.86	208	26.90	118.1	3.92	3.44	1469.
220	4.01	33.86	218	26.90	117.7	4.04	3.70	1469.
230	3.92	33.86	228	26.91	117.2	4.16	3.97	1469.
240	3.89	33.87	238	26.92	116.2	4.27	4.25	1469.
250	3.86	33.89	248	26.94	114.1	4.39	4.53	1469.
260	3.84	33.89	258	26.94	114.4	4.50	4.83	1469.
270	3.80	33.91	268	26.96	112.7	4.62	5.13	1469.
280	3.80	33.91	278	26.96	112.2	4.73	5.45	1469.
290	3.79	33.93	288	26.98	110.9	4.84	5.77	1469.
300	3.77	33.95	298	27.00	109.4	4.95	6.11	1469.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6- 90

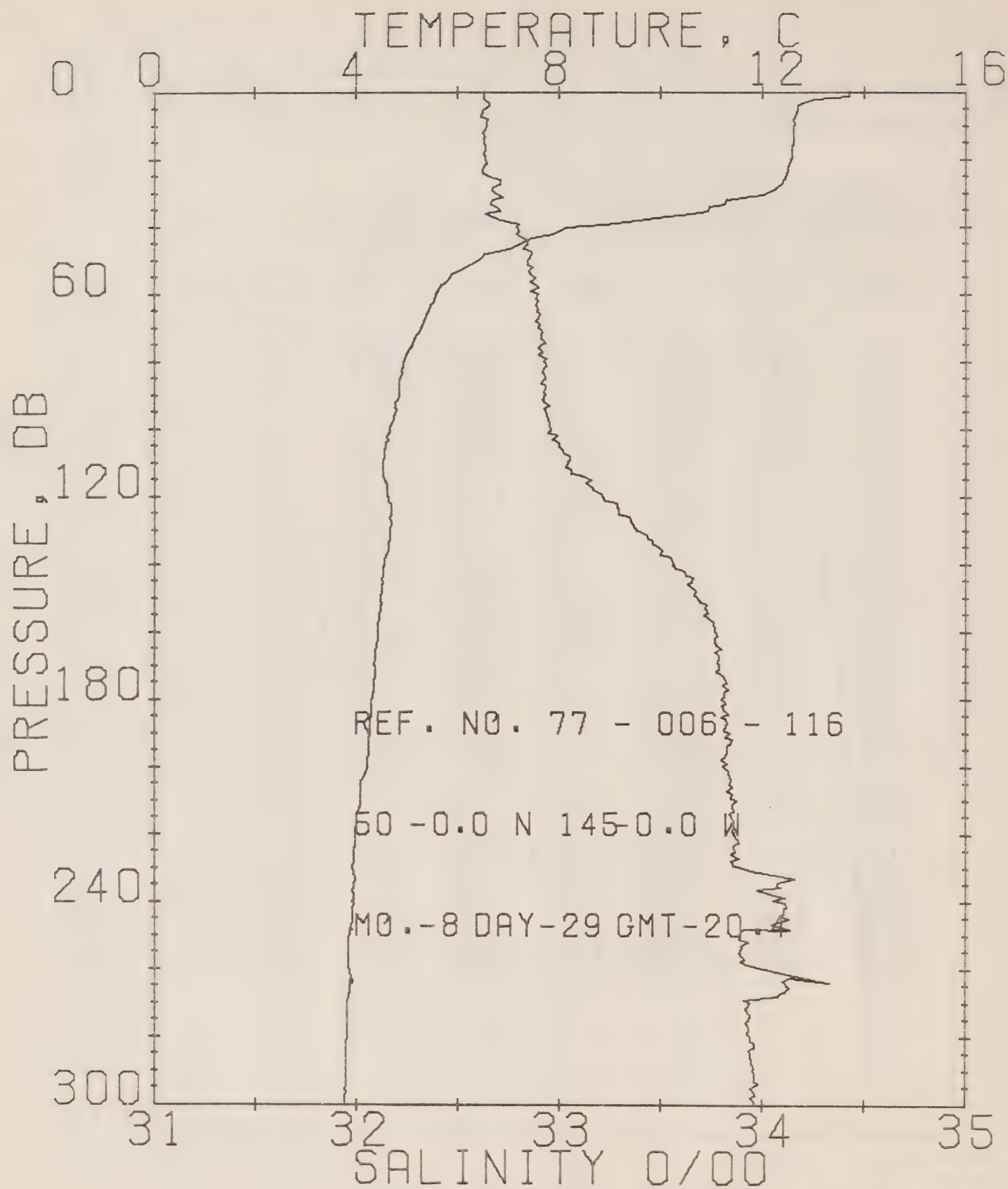
DATE 25/ 8/77

POSITION 50- .0N, 145- .0W

GMT 17.2

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.34	32.64	0	24.72	323.5	.00	.00	1496.
50	5.86	32.80	50	25.92	209.7	1.40	.32	1473.
100	4.62	32.99	99	26.15	188.3	2.38	1.07	1468.
150	4.57	33.67	149	26.70	136.9	3.18	2.08	1470.
200	4.11	33.85	199	26.88	119.3	3.80	3.19	1469.
250	3.86	33.89	248	26.94	114.1	4.39	4.53	1469.
300	3.77	33.95	298	27.00	109.4	4.95	6.11	1469.
350	3.81	34.01	347	27.04	105.7	5.49	7.68	1470.
400	3.79	34.07	397	27.09	101.4	6.00	9.86	1471.
450	3.71	34.12	446	27.14	97.3	6.50	12.01	1472.
500	3.64	34.10	496	27.19	92.5	6.98	14.32	1472.
550	3.59	34.20	545	27.21	90.6	7.44	16.78	1473.
600	3.49	34.23	595	27.25	87.5	7.88	19.38	1473.
650	3.40	34.27	644	27.29	84.0	8.31	22.11	1474.
700	3.32	34.31	694	27.32	81.0	8.73	24.96	1474.
750	3.22	34.32	743	27.35	78.9	9.13	27.93	1475.
800	3.13	34.35	793	27.37	76.6	9.51	30.97	1475.
850	3.03	34.37	842	27.40	74.4	9.89	34.13	1476.
900	2.94	34.40	891	27.44	71.1	10.25	37.38	1476.
950	2.89	34.41	941	27.45	70.5	10.61	40.72	1477.
1000	2.82	34.45	990	27.47	68.6	10.95	44.17	1477.
1050	2.76	34.44	1040	27.48	67.5	11.29	47.72	1478.
1100	2.69	34.47	1089	27.51	65.0	11.63	51.36	1479.
1150	2.65	34.46	1138	27.51	65.1	11.95	55.08	1479.
1200	2.59	34.48	1188	27.53	63.6	12.27	58.92	1480.
1250	2.52	34.50	1237	27.55	61.5	12.58	62.81	1480.
1300	2.46	34.51	1286	27.56	60.2	12.89	66.77	1481.
1350	2.41	34.52	1336	27.58	59.2	13.19	70.81	1482.
1400	2.35	34.54	1385	27.60	57.5	13.48	74.91	1482.





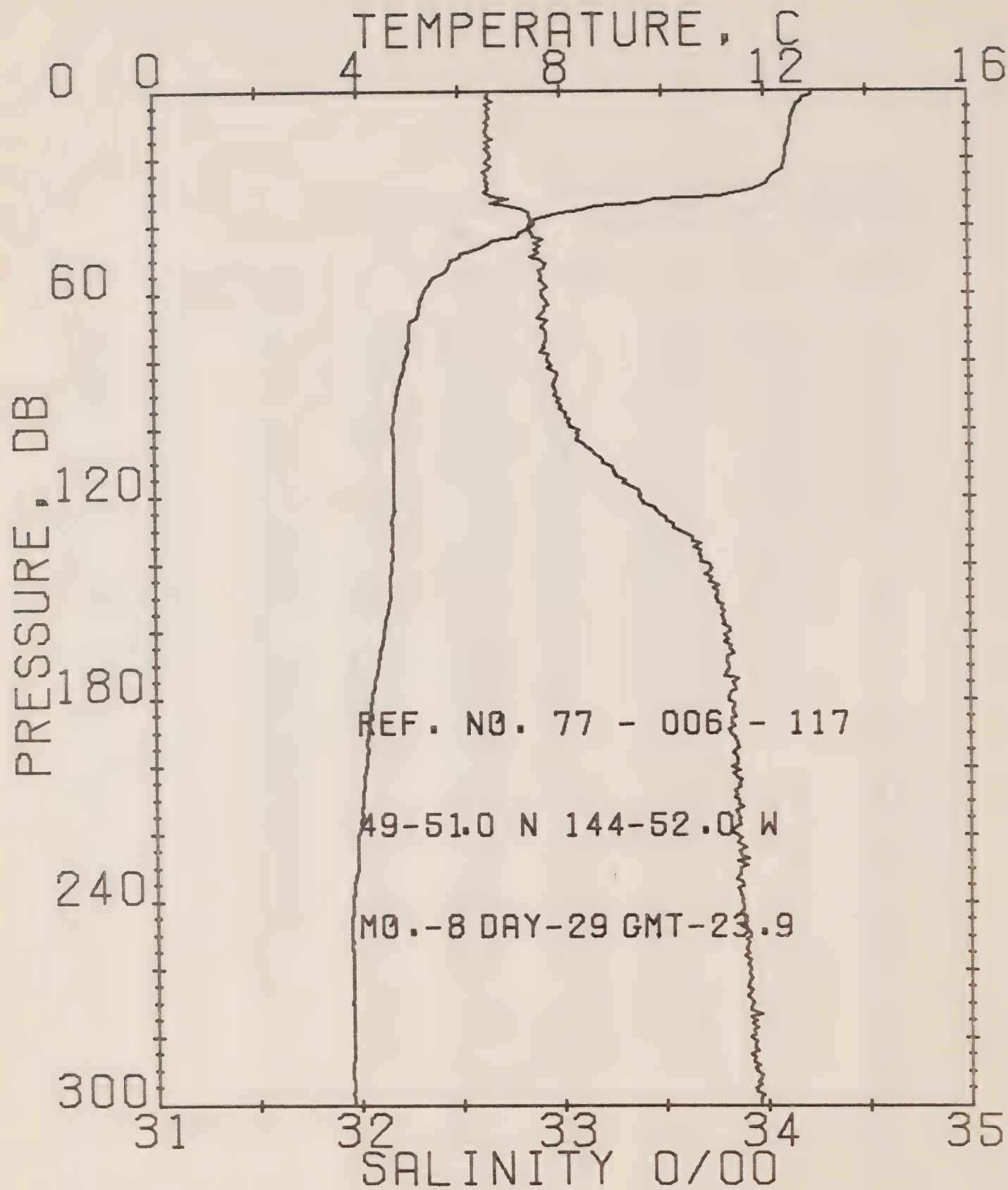
## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6-116

DATE 29/ 8/77

POSITION 50- .0N, 145- .0W GMT 20.4

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	13.71	32.64	0	24.44	349.7	.00	.00	1500.
5	12.69	32.64	5	24.65	330.3	.17	.00	1497.
10	12.62	32.65	10	24.67	328.5	.33	.02	1497.
15	12.60	32.63	15	24.66	329.1	.50	.04	1497.
20	12.57	32.64	20	24.67	328.3	.66	.07	1497.
25	12.45	32.66	25	24.71	324.7	.83	.10	1496.
30	12.06	32.69	30	24.81	315.4	.99	.15	1495.
35	10.93	32.71	35	25.03	294.5	1.14	.20	1491.
40	8.14	32.79	40	25.54	245.6	1.28	.25	1481.
45	7.22	32.85	45	25.72	229.0	1.39	.30	1478.
50	6.38	32.85	50	25.83	218.4	1.50	.36	1475.
55	5.85	32.88	55	25.92	209.5	1.61	.41	1473.
60	5.58	32.90	60	25.97	205.4	1.72	.48	1472.
65	5.42	32.89	65	25.98	203.8	1.82	.54	1471.
70	5.27	32.90	70	26.01	201.5	1.92	.61	1470.
75	5.10	32.91	75	26.04	198.8	2.02	.68	1470.
80	4.95	32.93	80	26.06	196.3	2.12	.76	1469.
90	4.84	32.93	89	26.08	194.8	2.31	.93	1469.
100	4.60	32.90	99	26.12	191.1	2.51	1.12	1469.
110	4.54	33.05	109	26.20	183.1	2.69	1.32	1466.
120	4.63	33.21	119	26.33	171.8	2.87	1.53	1469.
130	4.67	33.30	129	26.45	159.8	3.04	1.74	1470.
140	4.56	33.50	139	26.61	145.0	3.19	1.95	1470.
150	4.49	33.60	149	26.71	135.6	3.33	2.15	1470.
160	4.43	33.70	159	26.78	128.7	3.46	2.36	1470.
170	4.36	33.70	169	26.81	126.6	3.59	2.57	1470.
180	4.31	33.80	179	26.83	124.9	3.71	2.80	1469.
190	4.26	33.83	189	26.86	122.0	3.84	3.03	1469.
200	4.21	33.81	199	26.84	123.3	3.96	3.27	1469.
210	4.09	33.87	209	26.90	117.8	4.08	3.52	1469.
220	3.98	33.80	218	26.90	117.6	4.20	3.78	1469.
230	3.94	33.91	228	26.95	113.5	4.31	4.05	1469.
240	3.93	34.07	238	27.08	101.1	4.42	4.30	1469.
250	3.85	33.89	248	26.94	114.1	4.52	4.55	1469.
260	3.85	34.02	258	27.05	104.5	4.63	4.84	1469.
270	3.81	33.95	268	26.98	110.7	4.73	5.11	1469.
280	3.80	33.94	278	26.99	110.2	4.84	5.42	1469.
290	3.70	33.95	288	27.00	109.1	4.95	5.74	1469.
300	3.77	33.94	298	26.99	109.9	5.06	6.07	1469.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 5-117

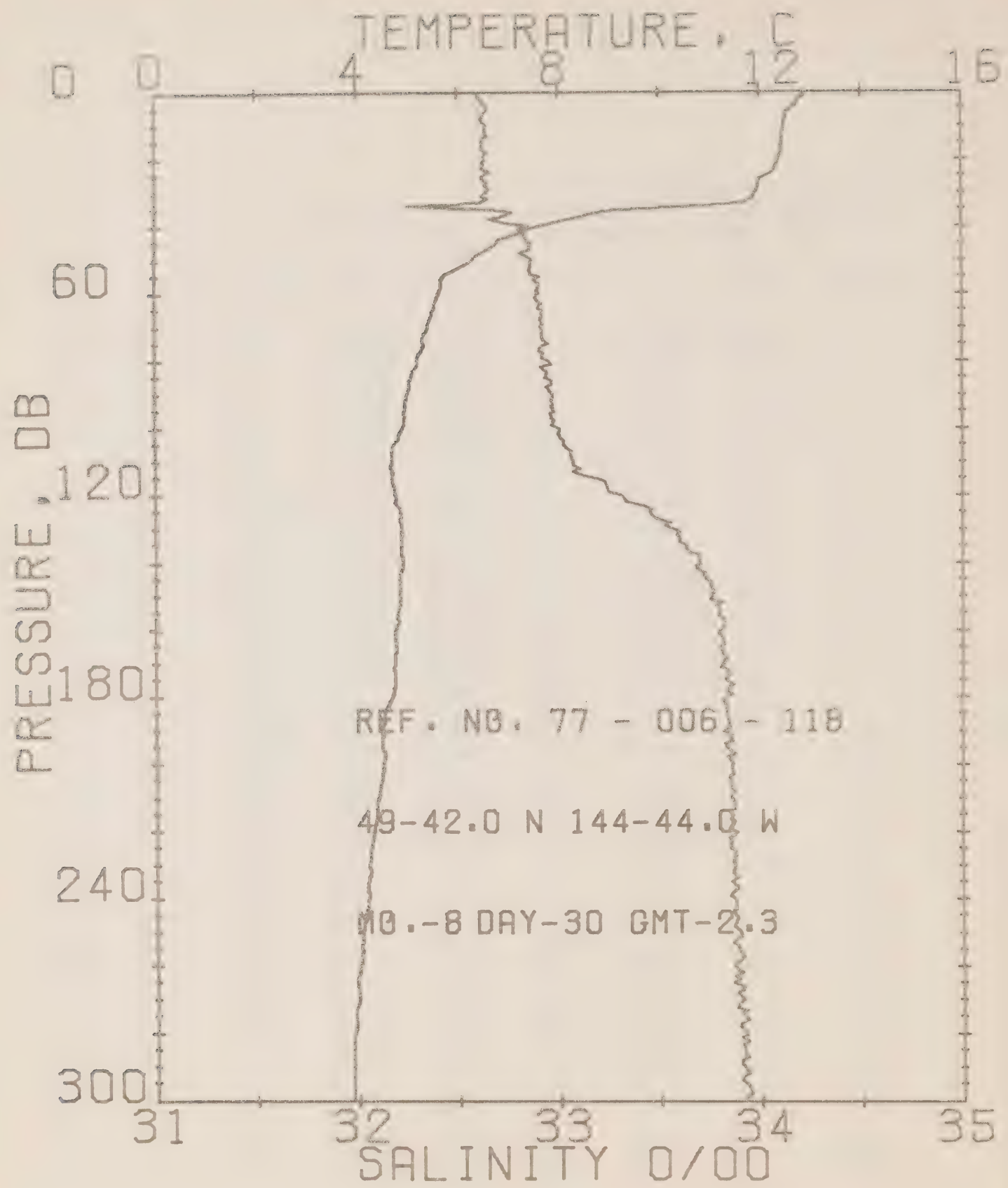
DATE 29/ 8/77

POSITION 49-51.0N, 144-52.0W

GMT 23.9

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.93	32.85	0	24.61	333.9	.00	.00	1498.
5	12.82	32.85	5	24.67	328.3	.17	.00	1497.
10	12.82	32.84	10	24.68	326.9	.33	.02	1498.
15	12.49	32.84	15	24.69	326.9	.49	.04	1498.
20	12.41	32.85	20	24.71	324.3	.66	.07	1498.
25	12.16	32.84	25	24.75	320.8	.82	.10	1495.
30	11.82	32.83	30	24.86	310.8	.98	.15	1495.
35	8.43	32.82	35	25.52	247.8	1.12	.19	1482.
40	7.45	32.85	40	25.69	231.9	1.23	.24	1479.
45	6.89	32.88	45	25.85	218.7	1.35	.29	1475.
50	5.85	32.90	50	25.94	208.1	1.45	.34	1472.
55	5.51	32.91	55	25.98	203.9	1.56	.39	1471.
60	5.28	32.91	60	26.01	201.4	1.66	.45	1470.
65	5.20	32.92	65	26.03	199.5	1.76	.52	1470.
70	5.01	32.91	70	26.04	198.5	1.86	.59	1469.
75	4.98	32.92	75	26.05	197.4	1.95	.66	1469.
80	4.90	32.93	80	26.07	195.3	2.05	.74	1469.
90	4.76	32.97	89	26.12	191.4	2.25	.90	1469.
100	4.67	33.08	99	26.21	182.3	2.43	1.08	1469.
110	4.59	33.20	109	26.31	173.2	2.61	1.28	1469.
120	4.69	33.08	119	26.45	160.2	2.78	1.47	1470.
130	4.66	33.57	129	26.61	145.1	2.93	1.68	1470.
140	4.63	33.71	139	26.72	134.8	3.07	1.88	1470.
150	4.61	33.76	149	26.76	131.4	3.20	2.05	1470.
160	4.49	33.82	159	26.82	125.4	3.33	2.25	1470.
170	4.37	33.81	169	26.85	124.6	3.46	2.47	1470.
180	4.23	33.81	179	26.84	123.2	3.58	2.66	1469.
190	4.16	33.82	189	26.86	121.9	3.70	2.91	1469.
200	4.11	33.83	199	26.87	120.9	3.82	3.15	1469.
210	4.05	33.86	209	26.90	118.1	3.94	3.40	1469.
220	3.96	33.84	215	26.90	118.4	4.06	3.60	1469.
230	3.95	33.88	228	26.92	116.1	4.17	3.90	1469.
240	3.84	33.87	238	26.95	115.2	4.27	4.20	1469.
250	3.82	33.91	248	26.96	112.2	4.40	4.49	1469.
260	3.83	33.91	258	26.96	112.6	4.52	4.76	1469.
270	3.83	33.93	268	26.97	111.5	4.63	5.09	1469.
280	3.83	33.91	278	26.96	112.5	4.74	5.40	1469.
290	3.82	33.94	288	26.99	110.3	4.85	5.72	1469.
300	3.83	33.95	298	26.99	110.2	4.96	6.05	1470.





## OFFSHORE OCEANOGRAPHY GROUP

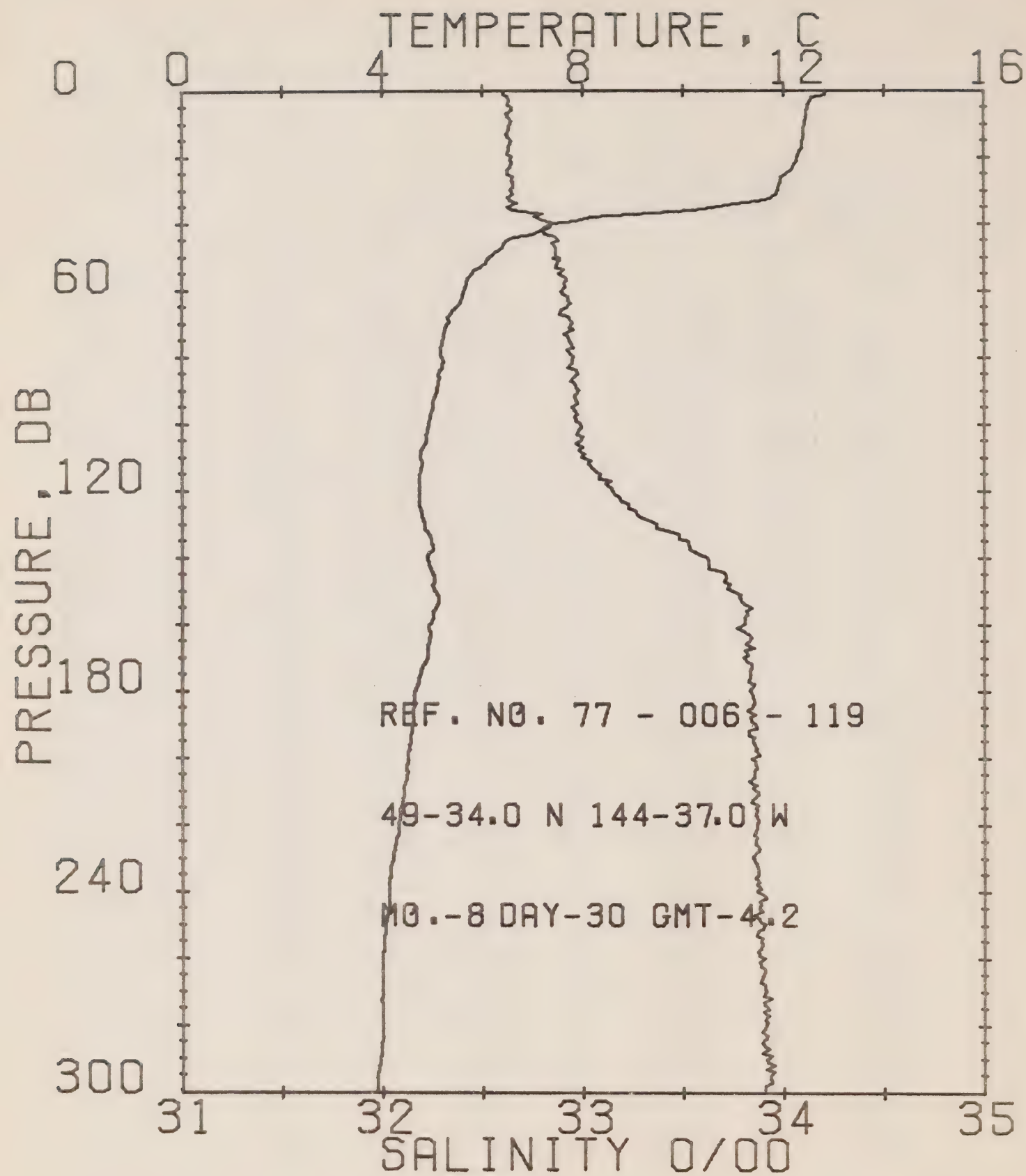
REFERENCE NO. 77- 5-115

DATE 33/ 3/77

POSITION 49-42.0N, 144-44.0W

SAL 2.5

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.67	32.81	0	24.59	335.9	.00	.00	1497.
5	12.64	32.85	5	24.67	328.5	.17	.00	1497.
10	12.48	32.85	10	24.70	325.8	.33	.02	1496.
15	12.44	32.85	15	24.69	326.7	.40	.04	1496.
20	12.37	32.84	20	24.71	324.9	.66	.07	1496.
25	12.11	32.83	25	24.75	320.8	.82	.10	1495.
30	11.92	32.85	30	24.80	316.2	.98	.15	1495.
35	9.53	32.85	35	25.24	274.6	1.13	.20	1485.
40	7.82	32.85	40	25.66	234.1	1.26	.25	1479.
45	6.77	32.86	45	25.79	221.8	1.37	.30	1476.
50	6.29	32.87	50	25.86	215.6	1.48	.35	1474.
55	5.72	32.91	55	25.96	206.2	1.59	.41	1472.
60	5.63	32.90	60	25.97	205.4	1.60	.47	1472.
65	5.50	32.92	65	25.99	202.9	1.80	.55	1471.
70	5.41	32.92	70	26.00	202.1	1.90	.60	1471.
75	5.32	32.93	75	26.04	198.4	2.00	.65	1471.
80	5.20	32.94	80	26.05	197.7	2.10	.70	1470.
90	5.00	32.97	89	26.10	193.3	2.20	.95	1470.
100	4.90	32.99	99	26.12	190.8	2.40	1.11	1470.
110	4.69	33.07	109	26.20	183.1	2.67	1.31	1469.
120	4.77	33.30	119	26.38	166.9	2.85	1.52	1470.
130	4.68	33.57	129	26.58	147.9	3.01	1.72	1471.
140	4.90	33.70	139	26.68	138.1	3.15	1.92	1471.
150	4.55	33.76	149	26.73	133.6	3.29	2.12	1471.
160	4.75	33.81	159	26.78	129.1	3.42	2.32	1471.
170	4.74	33.82	169	26.79	127.9	3.54	2.54	1471.
180	4.69	33.84	179	26.81	126.2	3.67	2.77	1471.
190	4.49	33.82	189	26.82	125.6	3.80	3.00	1470.
200	4.51	33.86	199	26.35	123.0	3.92	3.25	1471.
210	4.41	33.85	209	26.85	122.4	4.04	3.50	1470.
220	4.30	33.87	218	26.36	120.0	4.16	3.77	1470.
230	4.22	33.86	225	26.88	119.6	4.29	4.05	1470.
240	4.20	33.87	233	26.89	119.5	4.40	4.35	1470.
250	4.07	33.89	240	26.92	116.5	4.52	4.65	1470.
260	4.03	33.86	253	26.90	117.9	4.64	4.95	1470.
270	3.99	33.91	260	26.95	114.0	4.75	5.24	1470.
280	3.91	33.92	270	26.90	112.8	4.87	5.55	1470.
290	3.89	33.91	286	26.95	113.4	4.98	5.85	1470.
300	3.89	33.95	290	26.99	110.5	5.09	6.25	1470.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6-119

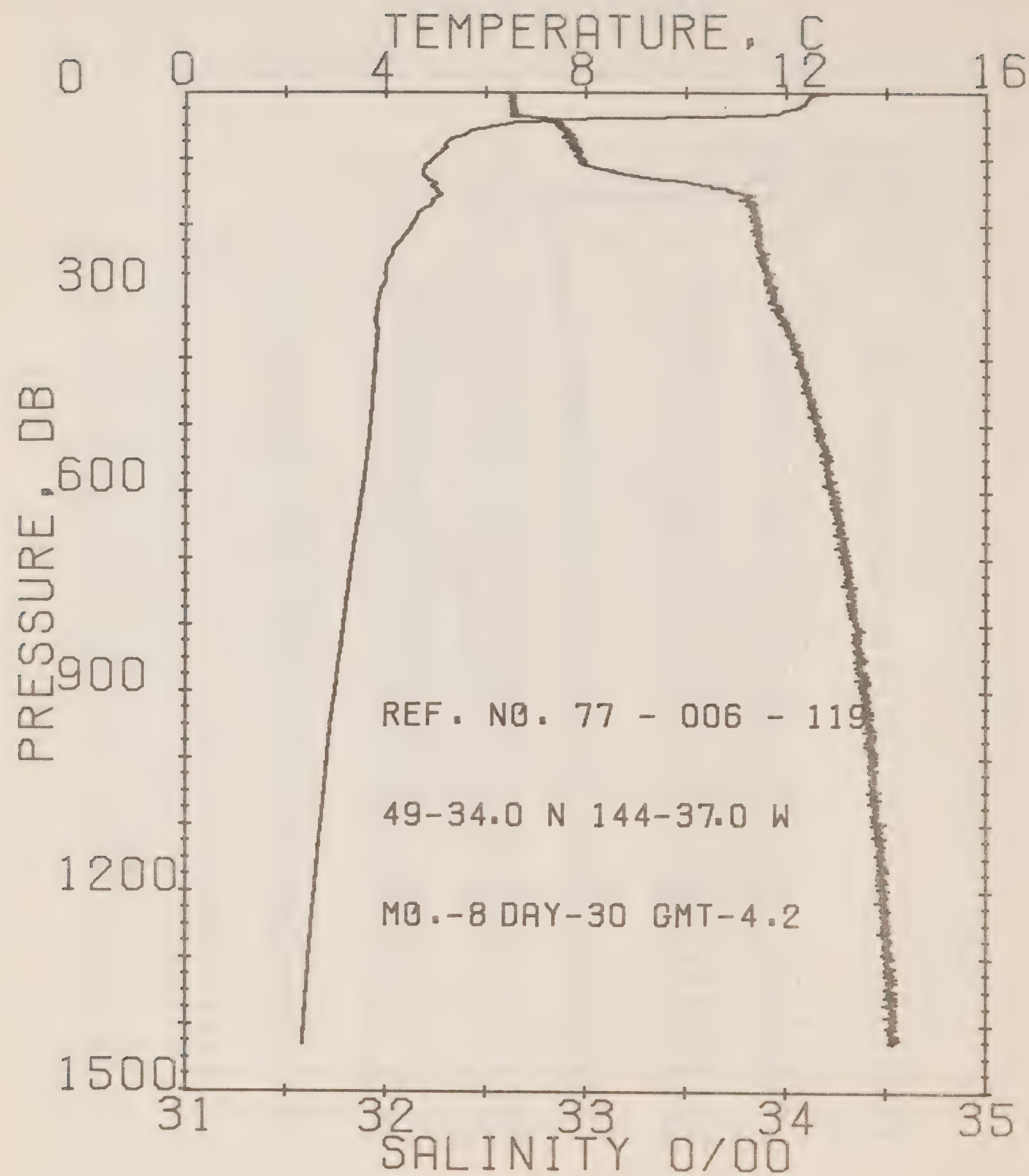
DATE 30/ 8/77

POSITION 49-54.0N, 144-37.0W

GMT 4.2

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.84	32.86	0	24.59	335.4	.00	.00	1497.
5	12.48	32.84	5	24.69	326.0	.16	.00	1496.
10	12.43	32.84	10	24.70	325.6	.33	.02	1496.
15	12.39	32.84	15	24.71	324.5	.49	.04	1496.
20	12.28	32.84	20	24.73	322.7	.65	.07	1496.
25	12.04	32.83	25	24.76	319.7	.81	.10	1495.
30	11.88	32.84	30	24.80	316.1	.97	.15	1495.
35	10.80	32.83	35	25.02	295.1	1.13	.20	1490.
40	7.45	32.85	40	25.69	232.0	1.26	.25	1479.
45	6.49	32.88	45	25.84	217.5	1.37	.30	1475.
50	6.14	32.87	50	25.87	214.0	1.48	.35	1474.
55	5.79	32.88	55	25.93	208.8	1.58	.41	1472.
60	5.63	32.90	60	25.96	205.9	1.69	.47	1472.
65	5.46	32.92	65	26.00	202.1	1.79	.53	1471.
70	5.31	32.95	70	26.04	198.7	1.89	.60	1471.
75	5.21	32.93	75	26.04	198.9	1.99	.67	1470.
80	5.20	32.95	80	26.05	197.4	2.09	.75	1470.
90	5.09	32.98	89	26.09	193.8	2.28	.92	1470.
100	4.93	32.98	99	26.11	192.1	2.48	1.11	1470.
110	4.78	32.99	109	26.13	189.7	2.67	1.31	1469.
120	4.75	33.14	119	26.26	178.2	2.85	1.53	1469.
130	4.60	33.36	129	26.42	163.1	3.02	1.75	1470.
140	4.91	33.61	139	26.61	145.0	3.18	1.96	1471.
150	5.06	33.74	149	26.69	137.3	3.32	2.17	1472.
160	4.94	33.81	159	26.76	131.0	3.45	2.38	1472.
170	4.89	33.80	169	26.76	131.0	3.58	2.60	1472.
180	4.65	33.83	179	26.81	126.2	3.71	2.82	1471.
190	4.59	33.86	189	26.84	123.9	3.84	3.08	1471.
200	4.51	33.85	199	26.84	123.7	3.96	3.31	1471.
210	4.42	33.87	209	26.87	121.3	4.08	3.50	1471.
220	4.32	33.80	218	26.87	120.7	4.20	3.83	1470.
230	4.21	33.85	228	26.87	120.9	4.32	4.11	1470.
240	4.13	33.87	238	26.90	118.3	4.44	4.39	1470.
250	4.06	33.90	248	26.93	115.3	4.56	4.68	1470.
260	4.00	33.91	258	26.94	114.6	4.68	4.93	1470.
270	3.99	33.91	268	26.94	114.2	4.79	5.30	1470.
280	3.99	33.92	278	26.95	113.9	4.90	5.62	1470.
290	3.94	33.92	288	26.95	113.4	5.02	5.95	1470.
300	3.89	33.91	298	26.95	113.6	5.13	6.28	1470.





## OFFSHORE OCEANOGRAPHY GROUP

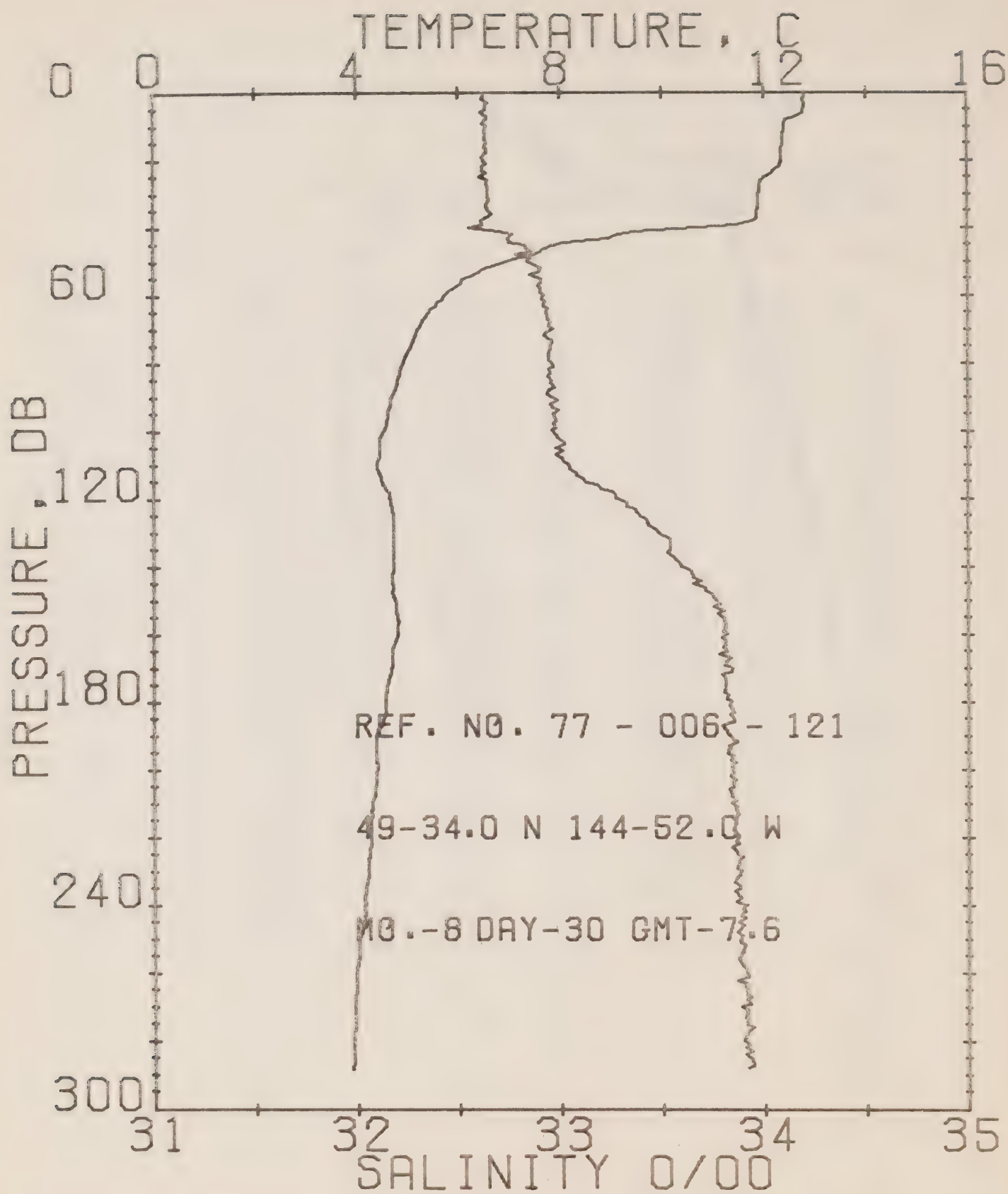
REFERENCE NO. 77- 5-119

DATE 30/ 8/77

POSITION 49-54.0N, 144-37.0W

GMI 4.2

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.64	32.60	0	24.59	335.4	.00	.00	1497.
50	6.14	32.67	50	25.37	214.0	1.48	.35	1474.
100	4.93	32.98	99	26.11	192.1	2.48	1.11	1470.
150	5.00	33.74	149	26.69	137.3	3.32	2.17	1472.
200	4.51	33.85	199	26.84	123.7	3.96	3.31	1471.
250	4.06	33.90	248	26.93	115.3	4.56	4.66	1470.
300	3.69	33.91	298	26.95	113.6	5.13	6.26	1470.
350	3.61	34.01	347	27.04	105.8	5.68	8.10	1470.
400	3.79	34.07	397	27.09	101.1	6.20	10.08	1471.
450	3.75	34.09	446	27.11	99.0	6.70	12.24	1472.
500	3.69	34.16	496	27.16	94.0	7.18	14.57	1473.
550	3.62	34.20	545	27.21	90.8	7.64	17.05	1473.
600	3.53	34.22	595	27.24	88.3	8.00	19.67	1474.
650	3.43	34.26	644	27.28	84.8	8.52	22.42	1474.
700	3.32	34.31	694	27.33	80.4	8.94	25.26	1475.
750	3.24	34.31	743	27.34	80.1	9.34	28.24	1475.
800	3.15	34.36	793	27.36	76.0	9.73	31.32	1475.
850	3.06	34.38	842	27.41	73.8	10.10	34.50	1476.
900	2.99	34.33	892	27.41	73.4	10.47	37.77	1476.
950	2.89	34.42	941	27.46	69.5	10.83	41.13	1477.
1000	2.82	34.42	990	27.46	69.0	11.17	44.50	1477.
1050	2.77	34.45	1040	27.49	66.8	11.51	48.10	1478.
1100	2.70	34.47	1089	27.51	64.8	11.85	51.70	1479.
1150	2.63	34.49	1138	27.53	63.0	12.17	55.47	1479.
1200	2.58	34.48	1183	27.50	63.4	12.47	59.20	1480.
1250	2.51	34.49	1237	27.55	61.8	12.80	63.13	1480.
1300	2.46	34.54	1286	27.59	58.1	13.10	67.08	1481.
1350	2.41	34.55	1336	27.60	57.1	13.40	71.11	1482.
1400	2.37	34.53	1385	27.59	58.4	13.69	75.20	1482.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 17- 6-121

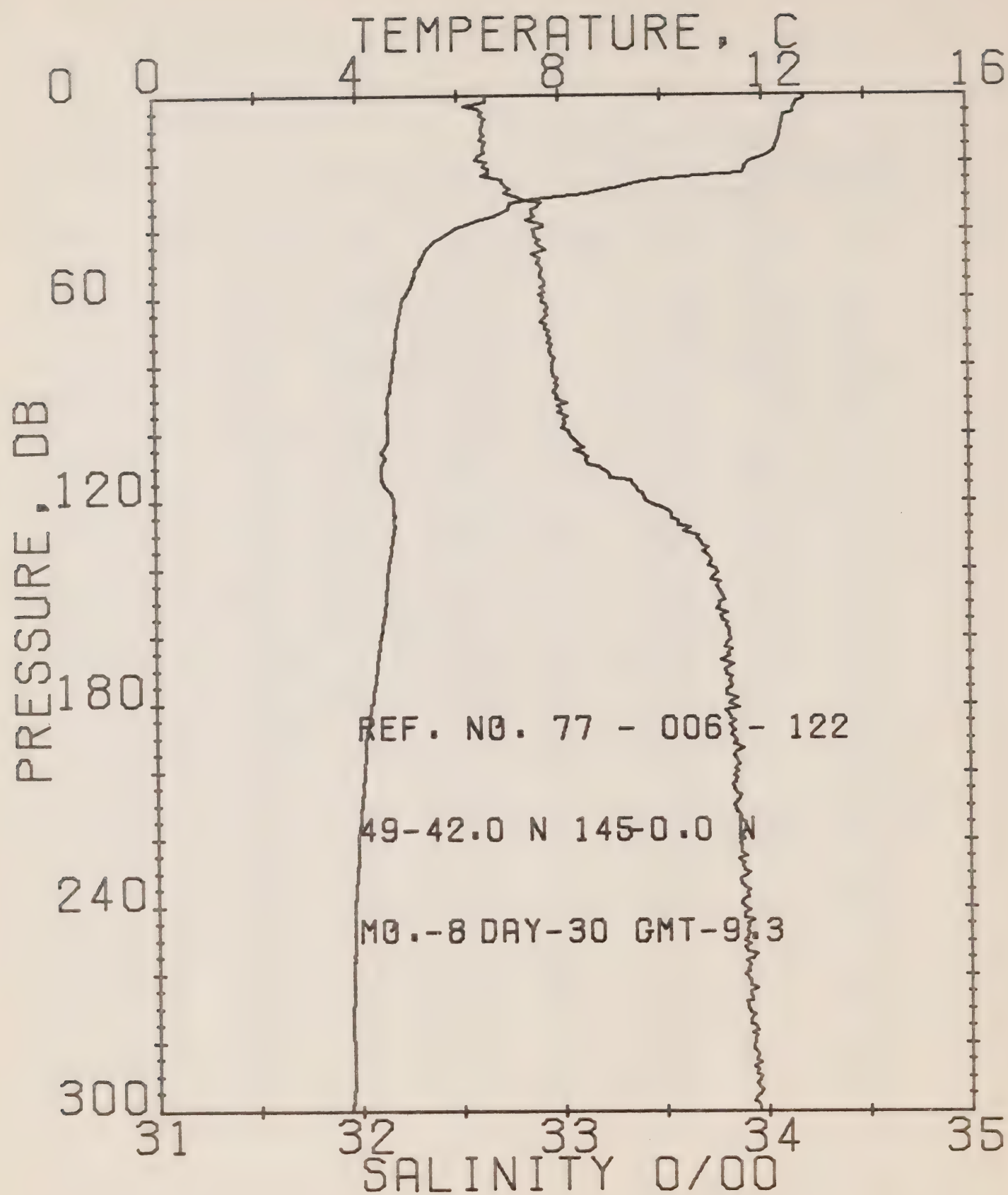
DATE 30/ 8/ 77

POSITION 49-54.0N, 144-52.0W

GMT 7.6

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.79	32.83	0	24.82	332.7	.00	.00	1497.
5	12.77	32.83	5	24.83	332.1	.17	.00	1497.
10	12.40	32.84	10	24.70	325.3	.33	.02	1496.
15	12.36	32.84	15	24.71	324.6	.49	.04	1496.
20	12.34	32.83	20	24.71	325.0	.66	.07	1496.
25	12.00	32.81	25	24.75	320.7	.82	.10	1495.
30	11.90	32.84	30	24.80	316.1	.98	.13	1495.
35	11.88	32.85	35	24.81	315.4	1.13	.20	1495.
40	10.82	32.86	40	24.90	303.9	1.20	.26	1491.
45	7.85	32.82	45	25.81	239.5	1.42	.32	1488.
50	6.95	32.84	50	25.75	226.2	1.54	.37	1477.
55	6.11	32.90	55	25.91	211.2	1.65	.40	1474.
60	5.73	32.92	60	25.97	205.4	1.75	.49	1472.
65	5.42	32.94	65	26.02	200.7	1.85	.50	1471.
70	5.21	32.97	70	26.06	196.2	1.95	.50	1470.
75	5.00	32.95	75	26.07	195.6	2.05	.70	1470.
80	4.90	32.96	80	26.09	193.4	2.15	.70	1469.
90	4.68	32.96	90	26.12	191.1	2.34	.94	1468.
100	4.54	32.97	99	26.14	189.3	2.53	1.10	1468.
110	4.41	33.04	109	26.21	182.7	2.72	1.30	1468.
120	4.66	33.28	119	26.37	167.5	2.80	1.50	1469.
130	4.73	33.48	129	26.52	153.0	3.05	1.70	1470.
140	4.72	33.59	139	26.62	144.4	3.20	1.94	1470.
150	4.76	33.70	149	26.75	132.3	3.34	2.14	1471.
160	4.80	33.82	159	26.79	128.7	3.47	2.30	1471.
170	4.88	33.84	169	26.82	125.6	3.60	2.50	1471.
180	4.55	33.84	179	26.83	124.8	3.72	2.70	1471.
190	4.57	33.83	189	26.84	123.9	3.85	3.02	1470.
200	4.59	33.84	199	26.85	122.7	3.97	3.27	1470.
210	4.28	33.84	209	26.86	121.7	4.00	3.52	1470.
220	4.20	33.87	210	26.89	119.4	4.21	3.70	1470.
230	4.20	33.89	220	26.90	117.8	4.33	4.00	1470.
240	4.14	33.91	238	26.90	115.7	4.45	4.30	1470.
250	4.03	33.89	248	26.92	116.4	4.57	4.64	1470.
260	3.98	33.91	250	26.95	113.8	4.60	4.94	1470.
270	3.95	33.89	260	26.93	115.5	4.80	5.20	1470.
280	3.93	33.90	278	26.94	114.2	4.91	5.50	1470.





## OFFSHORE OCEANOGRAPHY GROUP

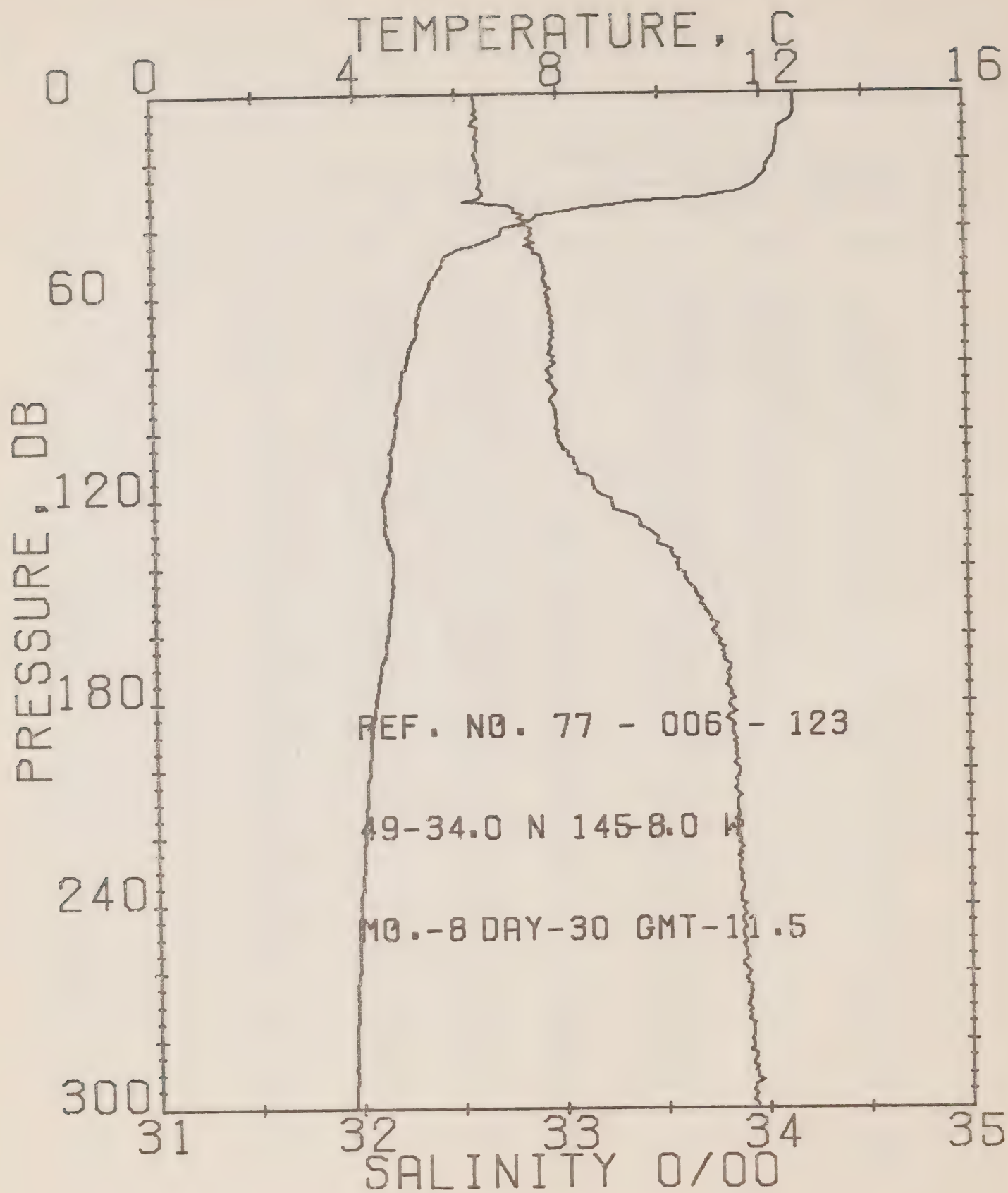
REFERENCE NO. 17- 0-122

DATE 30/ 8/77

POSITION 49-42.0N, 145- .0W

GMT 9.4

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.02	32.04	0	24.02	332.3	.00	.00	1497.
5	12.02	32.02	5	24.65	330.1	.17	.00	1497.
10	12.37	32.02	10	24.69	326.0	.37	.02	1490.
15	12.26	32.03	15	24.72	323.4	.40	.04	1490.
20	11.75	32.04	20	24.83	313.5	.55	.07	1494.
25	9.85	32.72	25	25.22	275.8	.80	.10	1487.
30	7.92	32.70	30	25.57	242.9	.94	.14	1480.
35	6.04	32.00	35	25.78	222.6	1.05	.18	1470.
40	5.91	32.00	40	25.91	210.4	1.16	.22	1473.
45	5.41	32.91	45	26.00	202.1	1.26	.26	1471.
50	5.25	32.09	50	26.00	202.0	1.36	.31	1470.
55	5.11	32.93	55	26.05	197.8	1.46	.36	1470.
60	4.92	32.92	60	26.06	196.4	1.56	.42	1469.
65	4.64	32.94	65	26.09	194.1	1.66	.48	1469.
70	4.77	32.95	70	26.10	193.0	1.75	.55	1460.
75	4.74	32.94	75	26.10	192.7	1.85	.62	1460.
80	4.69	32.90	80	26.12	191.0	1.95	.70	1460.
90	4.59	32.96	90	26.14	188.7	2.14	.86	1460.
100	4.58	33.04	99	26.19	184.2	2.32	1.04	1460.
110	4.45	33.10	109	26.32	172.3	2.50	1.23	1460.
120	4.69	33.41	119	26.46	157.5	2.66	1.42	1470.
130	4.68	33.00	129	26.67	139.4	2.61	1.61	1470.
140	4.58	33.70	139	26.70	130.8	2.95	1.80	1470.
150	4.52	33.70	149	26.78	128.7	3.09	1.99	1470.
160	4.45	33.52	159	26.83	124.7	3.20	2.19	1470.
170	4.54	33.00	169	26.82	125.4	3.37	2.40	1469.
180	4.23	33.02	179	26.85	122.7	3.45	2.62	1469.
190	4.12	33.54	189	26.67	120.3	3.57	2.85	1469.
200	4.07	33.56	199	26.89	118.5	3.60	3.09	1469.
210	4.02	33.34	209	26.89	119.1	3.51	3.30	1469.
220	3.95	33.09	219	26.95	115.1	3.97	3.59	1469.
230	3.92	33.91	229	26.95	113.3	4.04	3.80	1469.
240	3.67	33.89	239	26.94	114.4	4.16	4.10	1469.
250	3.56	33.59	249	26.94	114.2	4.27	4.41	1469.
260	3.84	33.69	259	26.94	114.5	4.39	4.70	1469.
270	3.62	33.90	269	26.95	113.4	4.50	5.01	1469.
280	3.64	33.95	279	26.96	111.2	4.51	5.32	1469.
290	3.64	33.96	289	26.99	109.5	4.72	5.64	1470.
300	3.78	33.94	299	26.99	110.1	4.87	5.97	1469.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8-123

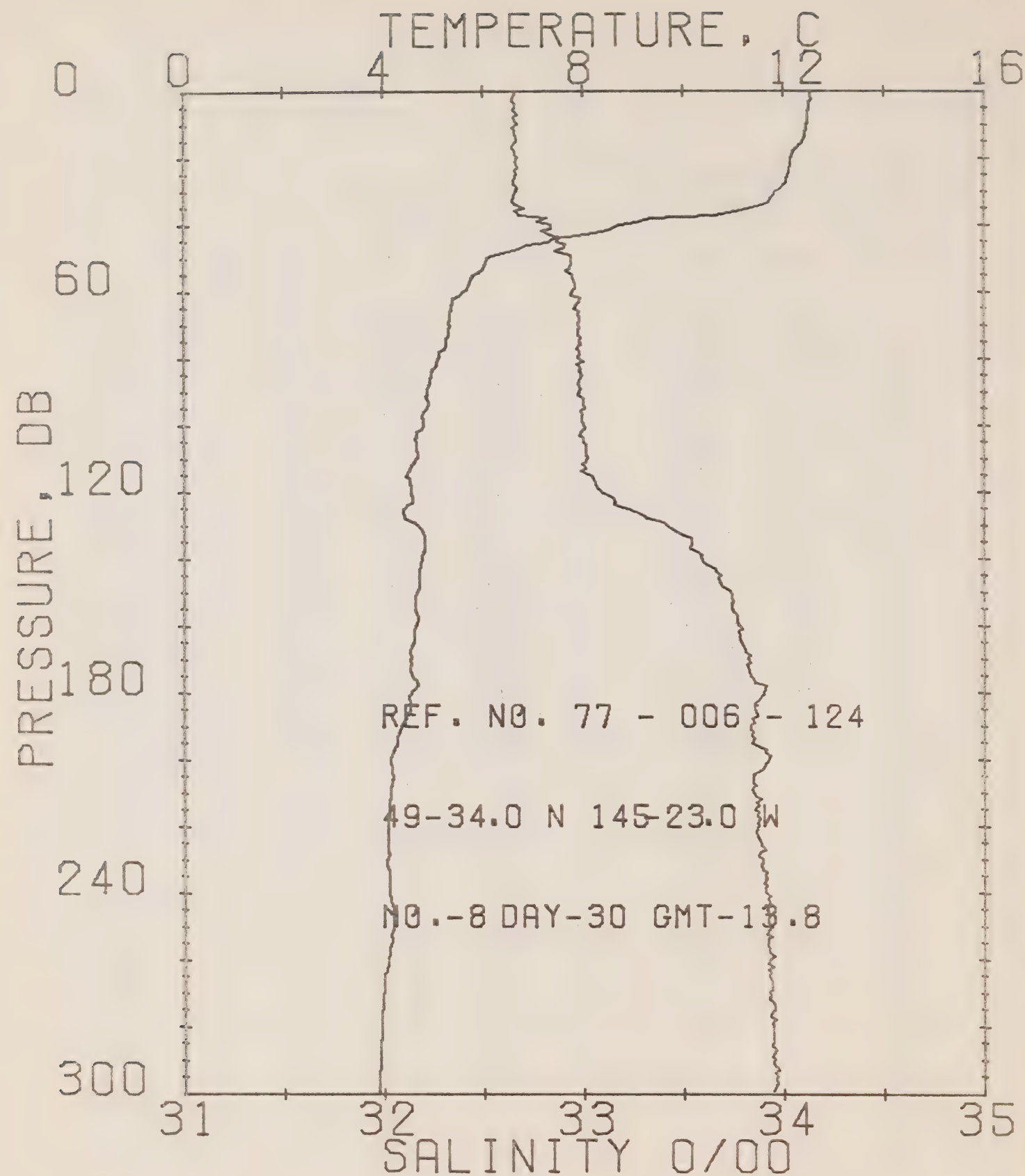
DATE 30/ 8/ 77

POSITION 49-54.0N, 145- 8.0W

GMI 11.5

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.86	32.59	0	24.62	332.9	.00	.00	1497.
5	12.87	32.61	5	24.63	332.3	.17	.00	1497.
10	12.87	32.62	10	24.69	326.2	.33	.02	1498.
15	12.82	32.60	15	24.69	326.1	.50	.04	1498.
20	12.18	32.60	20	24.72	323.9	.66	.07	1498.
25	11.99	32.62	25	24.77	319.5	.82	.10	1498.
30	11.23	32.64	30	24.92	305.0	.98	.15	1492.
35	8.89	32.76	35	25.55	245.3	1.11	.19	1481.
40	8.91	32.67	40	25.78	223.3	1.23	.24	1477.
45	8.83	32.65	45	25.84	217.6	1.34	.29	1474.
50	5.73	32.92	50	25.97	205.1	1.45	.34	1472.
55	5.50	32.93	55	26.00	201.8	1.55	.39	1471.
60	5.36	32.95	60	26.03	199.3	1.65	.45	1471.
65	5.24	32.95	65	26.05	197.5	1.75	.51	1470.
70	5.20	32.97	70	26.07	195.9	1.84	.56	1470.
75	5.07	32.97	75	26.08	194.5	1.94	.65	1470.
80	4.99	32.98	80	26.10	193.0	2.04	.73	1470.
90	4.86	32.98	89	26.10	193.0	2.23	.90	1469.
100	4.75	32.99	99	26.14	189.5	2.42	1.06	1469.
110	4.67	33.07	109	26.21	182.9	2.61	1.20	1469.
120	4.50	33.24	119	26.36	168.3	2.70	1.49	1469.
130	4.34	33.44	129	26.52	153.7	2.95	1.69	1469.
140	4.70	33.57	139	26.60	146.0	3.10	1.90	1470.
150	4.64	33.69	149	26.70	136.4	3.20	2.11	1470.
160	4.57	33.74	159	26.75	131.8	3.37	2.32	1470.
170	4.43	33.83	169	26.80	124.0	3.50	2.55	1470.
180	4.32	33.83	179	26.85	122.8	3.62	2.75	1470.
190	4.22	33.84	189	26.86	121.3	3.75	2.95	1469.
200	4.18	33.88	199	26.89	119.1	3.87	3.22	1469.
210	4.12	33.88	209	26.89	119.2	3.90	3.47	1469.
220	4.07	33.88	218	26.89	118.5	4.11	3.75	1469.
230	4.05	33.88	228	26.90	118.1	4.22	4.00	1469.
240	3.97	33.89	238	26.90	115.3	4.34	4.20	1469.
250	3.95	33.88	248	26.90	115.8	4.46	4.37	1469.
260	3.93	33.91	258	26.90	113.9	4.57	4.67	1469.
270	3.90	33.90	268	26.94	114.4	4.69	5.10	1469.
280	3.87	33.91	278	26.96	112.9	4.80	5.50	1469.
290	3.86	33.94	288	26.98	111.2	4.91	5.82	1470.
300	3.83	33.95	298	27.00	109.2	5.02	6.10	1470.





## OFFSHORE OCEANOGRAPHY GROUP

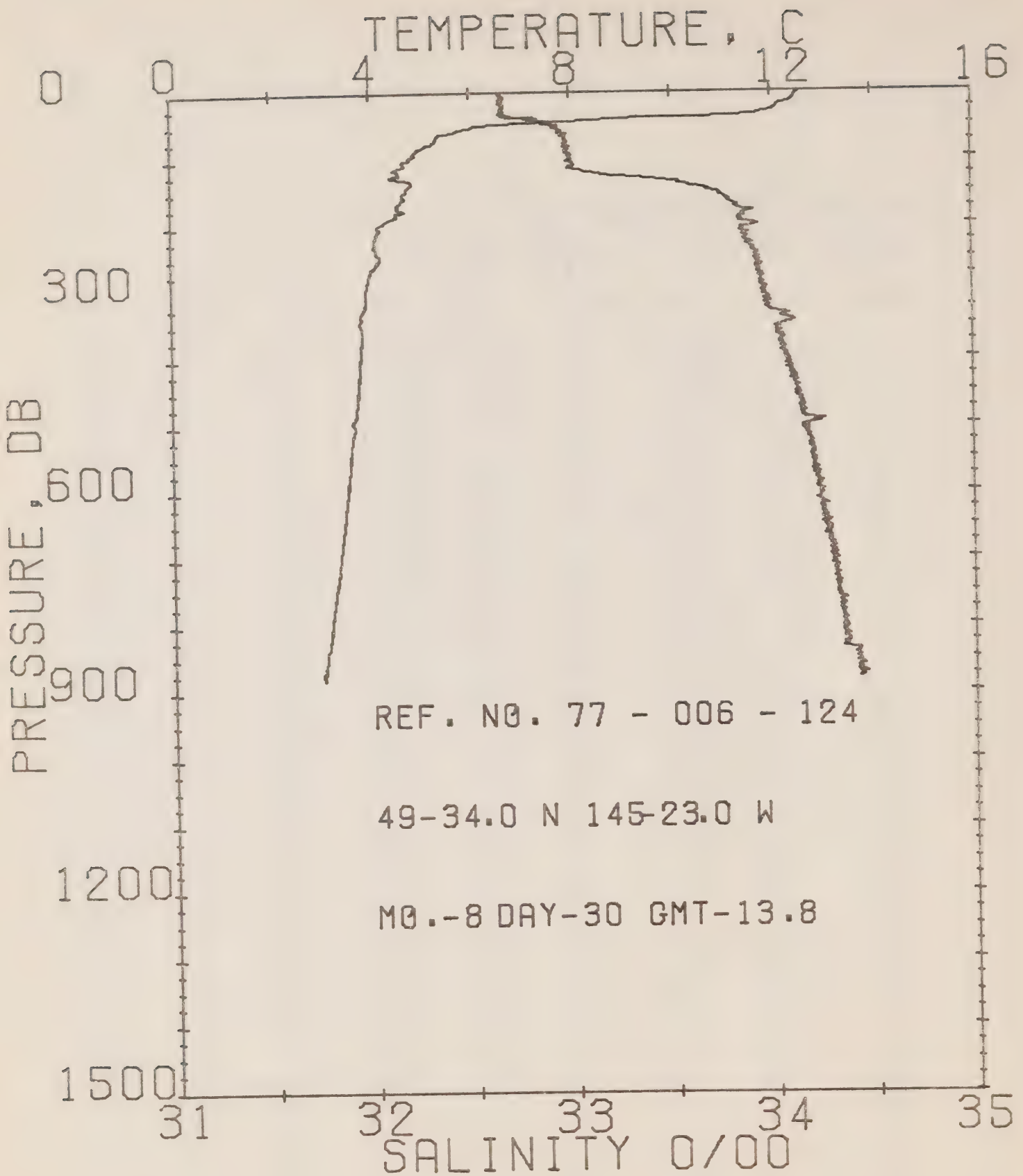
REFERENCE NO. 77- 8-124

DATE 30/ 8/77

POSITION 49-54.0N, 145-23.0W

GMT 13.8

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.33	32.86	0	24.69	325.8	.00	.00	1496.
5	12.30	32.86	5	24.70	325.2	.16	.00	1496.
10	12.47	32.87	10	24.72	323.9	.33	.02	1496.
15	12.37	32.86	15	24.73	322.6	.49	.04	1496.
20	12.14	32.87	20	24.78	318.1	.65	.07	1495.
25	12.08	32.86	25	24.78	317.8	.81	.10	1495.
30	11.86	32.87	30	24.83	313.6	.97	.15	1495.
35	11.50	32.70	35	24.95	301.7	1.12	.20	1495.
40	8.72	32.84	40	25.49	250.6	1.26	.25	1484.
45	7.32	32.87	45	25.72	228.5	1.38	.30	1478.
50	6.09	32.94	50	25.94	208.1	1.49	.36	1474.
55	5.79	32.95	55	25.98	204.2	1.59	.41	1472.
60	5.61	32.95	60	26.00	202.0	1.69	.47	1472.
65	5.35	32.96	65	26.04	198.3	1.79	.53	1471.
70	5.32	32.97	70	26.06	196.8	1.89	.60	1471.
75	5.26	32.98	75	26.07	195.8	1.99	.67	1471.
80	5.09	32.98	80	26.09	194.1	2.09	.75	1470.
90	4.87	32.98	89	26.11	191.5	2.28	.92	1469.
100	4.61	33.00	99	26.14	189.4	2.47	1.10	1469.
110	4.66	33.02	109	26.17	186.6	2.66	1.36	1469.
120	4.56	33.09	119	26.24	180.2	2.84	1.52	1469.
130	4.70	33.41	129	26.48	157.5	3.01	1.73	1470.
140	4.78	33.58	139	26.60	145.9	3.16	1.94	1470.
150	4.66	33.73	149	26.73	133.5	3.30	2.15	1470.
160	4.64	33.77	159	26.77	130.3	3.43	2.36	1471.
170	4.54	33.82	169	26.82	125.7	3.56	2.57	1470.
180	4.54	33.90	179	26.88	119.7	3.69	2.79	1471.
190	4.54	33.83	189	26.85	123.1	3.81	3.02	1470.
200	4.14	33.95	199	26.94	114.0	3.93	3.26	1469.
210	4.13	33.85	209	26.88	119.9	4.05	3.51	1469.
220	4.09	33.87	218	26.90	117.9	4.16	3.77	1469.
230	4.06	33.90	228	26.92	115.8	4.28	4.04	1469.
240	4.12	33.91	238	26.93	115.7	4.40	4.31	1470.
250	4.18	33.94	248	26.95	114.0	4.51	4.60	1470.
260	4.08	33.95	258	26.95	113.4	4.63	4.90	1470.
270	3.98	33.93	265	26.96	112.7	4.74	5.20	1470.
280	3.95	33.94	278	26.97	111.4	4.85	5.51	1470.
290	3.91	33.95	288	26.98	110.6	4.96	5.84	1470.
300	3.90	33.95	298	26.99	110.3	5.07	6.17	1470.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6-124

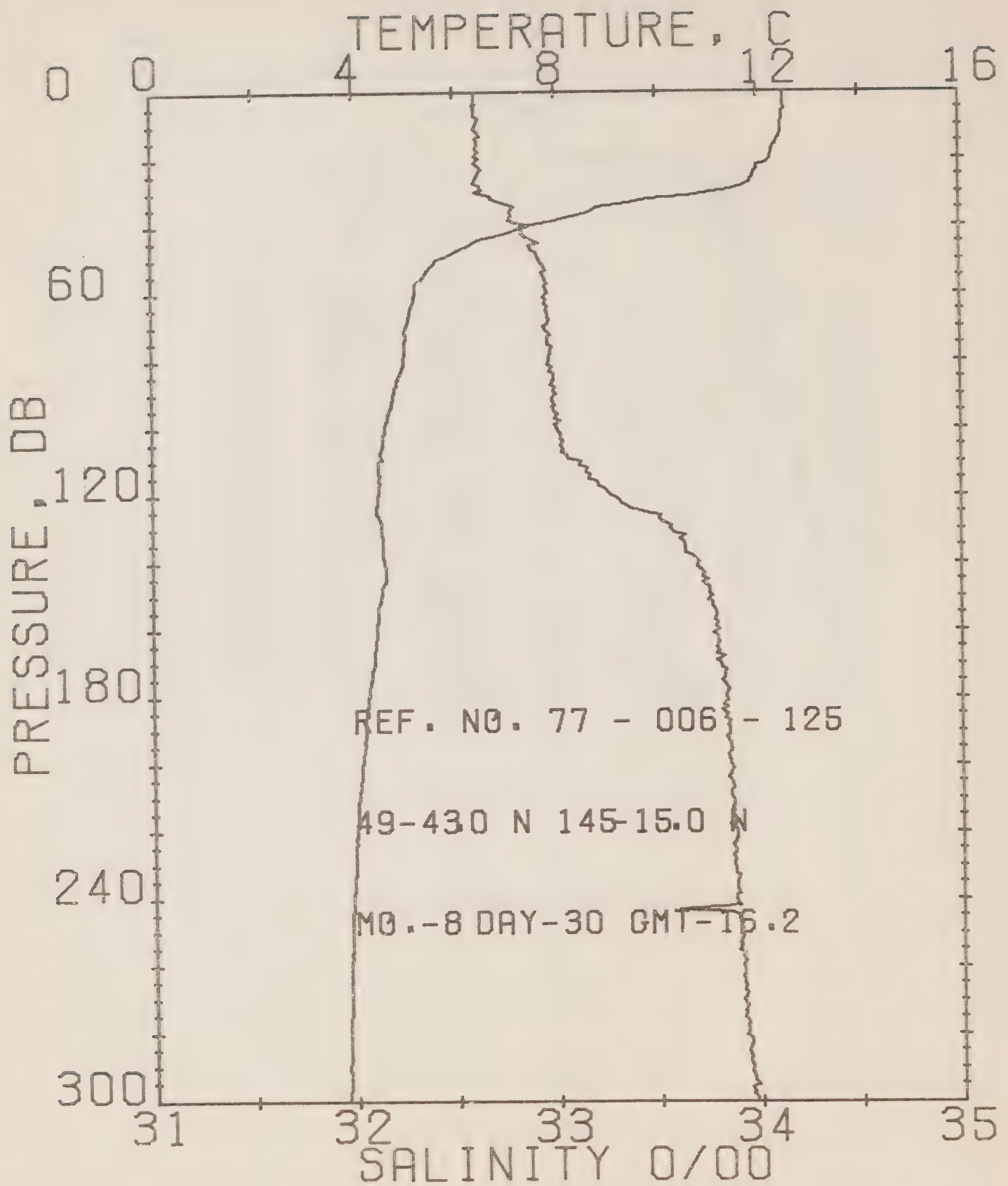
DATE 30/ 8/77

POSITION 49-34.0N, 145-23.0W

GMI 13.8

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.53	32.88	0	24.89	325.8	.00	.00	1498.
50	8.89	32.94	50	25.94	208.1	1.40	.30	1474.
100	4.81	33.00	99	26.14	189.4	2.47	1.10	1469.
150	4.66	33.73	149	26.73	133.5	3.30	2.15	1470.
200	4.14	33.93	199	26.94	114.0	3.93	3.20	1469.
250	4.18	33.94	248	26.95	114.0	4.51	4.00	1470.
300	3.90	33.95	298	26.99	110.3	5.07	5.17	1470.
350	3.80	34.07	347	27.09	101.0	5.60	7.91	1470.
400	3.77	34.07	397	27.10	100.8	6.11	9.86	1471.
450	3.72	34.13	446	27.14	96.8	6.61	12.02	1472.
500	3.64	34.19	496	27.20	91.8	7.08	14.29	1472.
550	3.56	34.19	545	27.21	90.9	7.54	16.74	1473.
600	3.49	34.23	595	27.25	87.7	7.98	19.35	1473.
650	3.42	34.27	644	27.28	84.7	8.41	22.10	1474.
700	3.33	34.30	694	27.32	81.6	8.83	24.95	1475.
750	3.23	34.32	743	27.34	79.4	9.23	27.92	1475.
800	3.13	34.35	793	27.38	76.3	9.62	30.99	1475.
850	3.04	34.41	842	27.43	71.2	9.99	34.12	1476.





## OFFSHORE OCEANOGRAPHY GROUP

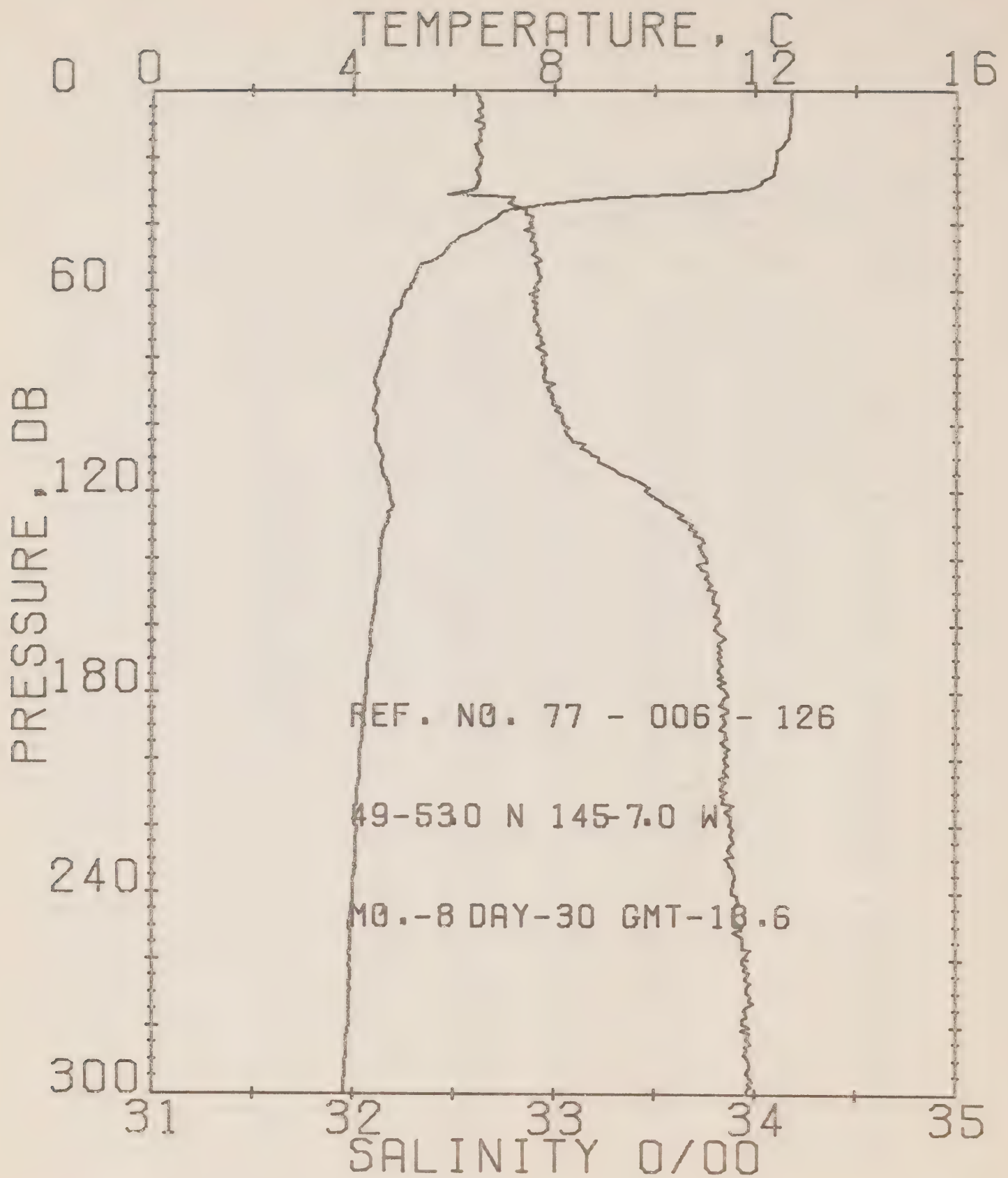
REFERENCE NO. 77- 5-125

DATE 30/ 8/77

POSITION 49-43.0N, 145-15.0W

GMT 16.2

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.53	32.88	0	24.65	329.6	.00	.00	1490.
5	12.54	32.81	5	24.65	329.3	.16	.00	1490.
10	12.49	32.82	10	24.67	328.3	.33	.02	1490.
15	12.57	32.82	15	24.69	326.3	.40	.04	1490.
20	12.27	32.82	20	24.72	323.9	.66	.07	1490.
25	11.93	32.82	25	24.76	318.1	.82	.10	1495.
30	11.11	32.81	30	24.92	304.9	.97	.15	1492.
35	8.76	32.79	35	25.45	254.6	1.11	.19	1484.
40	7.39	32.67	40	25.71	229.4	1.23	.24	1473.
45	6.35	32.91	45	25.89	212.9	1.35	.25	1474.
50	5.65	32.92	50	25.96	204.2	1.45	.34	1472.
55	5.39	32.94	55	26.05	199.6	1.55	.39	1471.
60	5.22	32.96	60	26.06	196.5	1.65	.45	1470.
65	5.13	32.95	65	26.06	196.1	1.75	.51	1470.
70	5.03	32.94	70	26.06	196.1	1.85	.56	1470.
75	5.02	32.96	75	26.08	194.6	1.94	.65	1470.
80	4.99	32.97	80	26.09	193.9	2.04	.75	1470.
90	4.77	33.00	90	26.14	189.0	2.23	.90	1469.
100	4.62	33.00	99	26.16	187.6	2.42	1.02	1468.
110	4.49	33.11	109	26.26	177.7	2.61	1.20	1465.
120	4.45	33.26	119	26.38	166.2	2.78	1.40	1465.
130	4.54	33.55	129	26.61	144.7	2.93	1.67	1469.
140	4.60	33.70	139	26.71	135.0	3.07	1.97	1476.
150	4.51	33.77	149	26.78	129.4	3.21	2.30	1470.
160	4.42	33.80	159	26.81	126.1	3.33	2.27	1470.
170	4.36	33.81	169	26.82	125.0	3.46	2.40	1470.
180	4.24	33.83	179	26.86	122.0	3.53	2.70	1469.
190	4.19	33.85	189	26.87	120.4	3.70	2.95	1469.
200	4.11	33.85	199	26.89	119.1	3.82	3.15	1469.
210	4.05	33.86	209	26.90	118.2	3.94	3.41	1469.
220	3.99	33.88	218	26.92	116.3	4.06	3.57	1469.
230	3.96	33.87	228	26.91	116.9	4.19	3.94	1469.
240	3.91	33.87	238	26.92	116.0	4.29	4.21	1469.
250	3.86	33.89	248	26.94	114.2	4.41	4.51	1469.
260	3.88	33.91	255	26.95	113.0	4.52	4.80	1469.
270	3.87	33.91	268	26.96	113.0	4.64	5.11	1469.
280	3.84	33.93	278	26.97	111.6	4.75	5.42	1469.
290	3.82	33.95	288	26.99	109.5	4.86	5.74	1469.
300	3.85	33.96	295	27.00	109.4	4.97	5.87	1470.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8-126

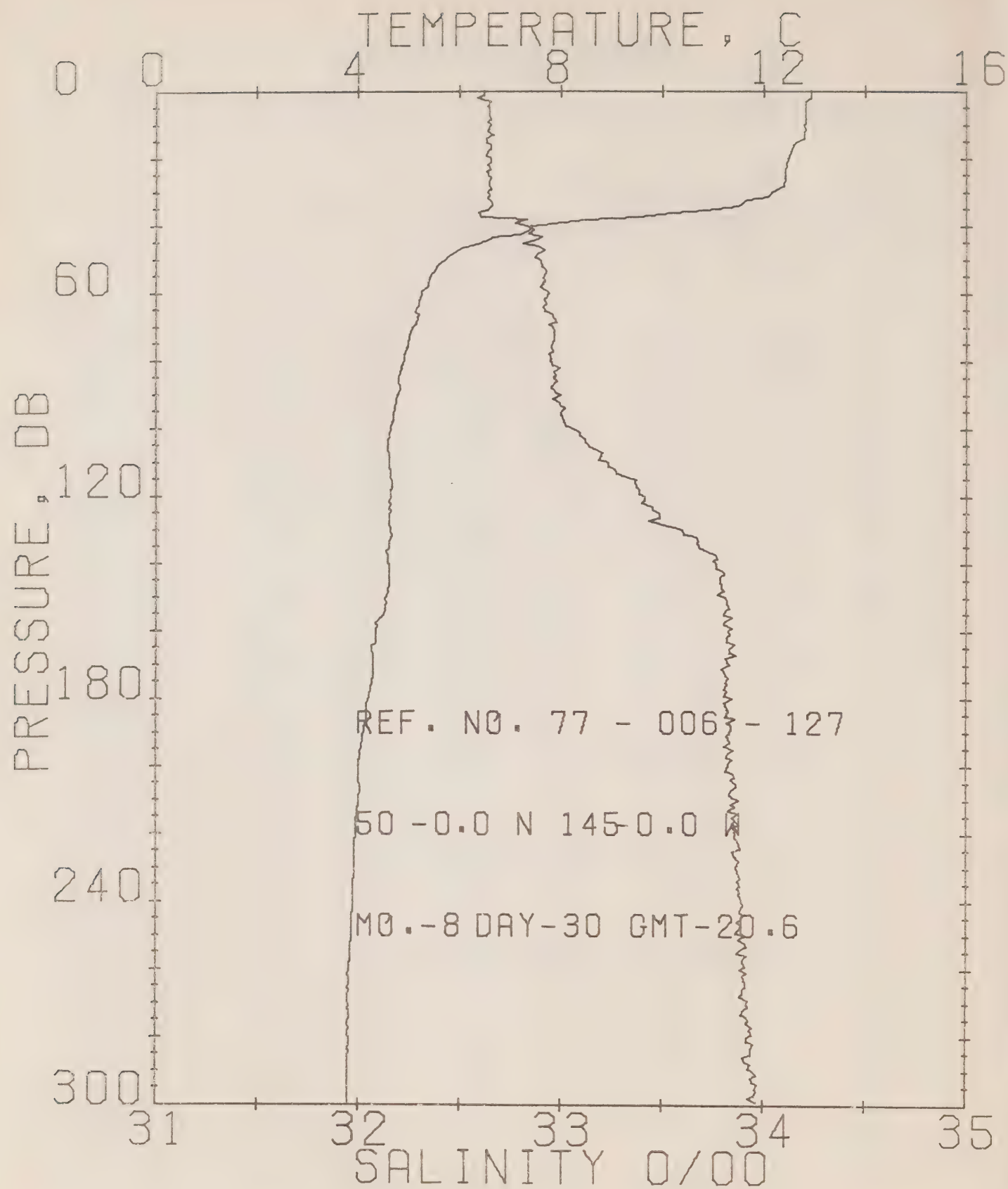
DATE 30/ 8/77

POSITION 49-55.0N, 145- 7.0W

GMT 18.7

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA J	POT. EN	SOUND
0	12.72	32.81	0	24.62	332.8	.00	.00	1497.
5	12.71	32.84	5	24.65	330.3	.17	.00	1497.
10	12.70	32.85	10	24.65	329.9	.33	.02	1497.
15	12.62	32.83	15	24.65	329.9	.50	.04	1497.
20	12.42	32.84	20	24.70	325.8	.66	.07	1490.
25	12.36	32.82	25	24.70	326.2	.82	.10	1490.
30	11.86	32.80	30	24.31	315.4	.98	.10	1494.
35	7.44	32.82	35	25.66	234.2	1.12	.15	1470.
40	8.03	32.88	40	25.82	218.9	1.23	.24	1475.
45	5.03	32.89	45	25.90	211.1	1.34	.20	1473.
50	5.07	32.91	50	25.97	205.0	1.44	.30	1472.
55	5.28	32.92	55	26.02	200.1	1.59	.35	1470.
60	5.05	32.92	60	26.05	197.7	1.64	.45	1469.
65	4.94	32.90	65	26.04	198.0	1.74	.51	1469.
70	4.76	32.92	70	26.08	195.1	1.84	.50	1465.
75	4.88	32.93	75	26.10	193.0	1.94	.60	1465.
80	4.57	32.94	80	26.12	191.2	2.07	.72	1460.
90	4.50	32.97	89	26.15	188.1	2.22	.65	1465.
100	4.48	33.05	99	26.21	182.4	2.41	1.07	1460.
110	4.58	33.22	109	26.35	171.1	2.59	1.20	1465.
120	4.73	33.48	119	26.51	154.6	2.75	1.45	1470.
130	4.84	33.88	129	26.69	136.8	2.39	1.55	1470.
140	4.54	33.76	139	26.77	130.2	3.07	1.82	1470.
150	4.46	33.80	149	26.81	126.2	3.16	2.01	1470.
160	4.58	33.81	159	26.85	124.6	3.28	2.21	1469.
170	4.52	33.82	169	26.84	123.3	3.40	2.41	1469.
180	4.28	33.88	179	26.88	120.1	3.57	2.65	1469.
190	4.26	33.85	189	26.87	120.5	3.65	2.80	1469.
200	4.14	33.85	199	26.88	119.8	3.77	3.10	1469.
210	4.07	33.88	209	26.89	118.7	3.89	3.55	1469.
220	4.07	33.87	218	26.91	117.3	4.06	3.81	1469.
230	4.05	33.88	228	26.90	118.5	4.12	3.87	1469.
240	4.00	33.89	238	26.92	115.8	4.24	4.10	1469.
250	3.93	33.94	248	26.97	111.3	4.35	4.44	1469.
260	3.94	33.95	258	26.98	110.4	4.46	4.75	1469.
270	3.93	33.96	268	26.99	109.9	4.57	5.02	1470.
280	3.90	33.96	278	26.99	109.4	4.68	5.30	1470.
290	3.85	33.97	288	27.00	108.7	4.79	5.55	1470.
300	3.81	33.97	298	27.01	108.0	4.90	5.97	1470.





## OFFSHORE OCEANOGRAPHY GROUP

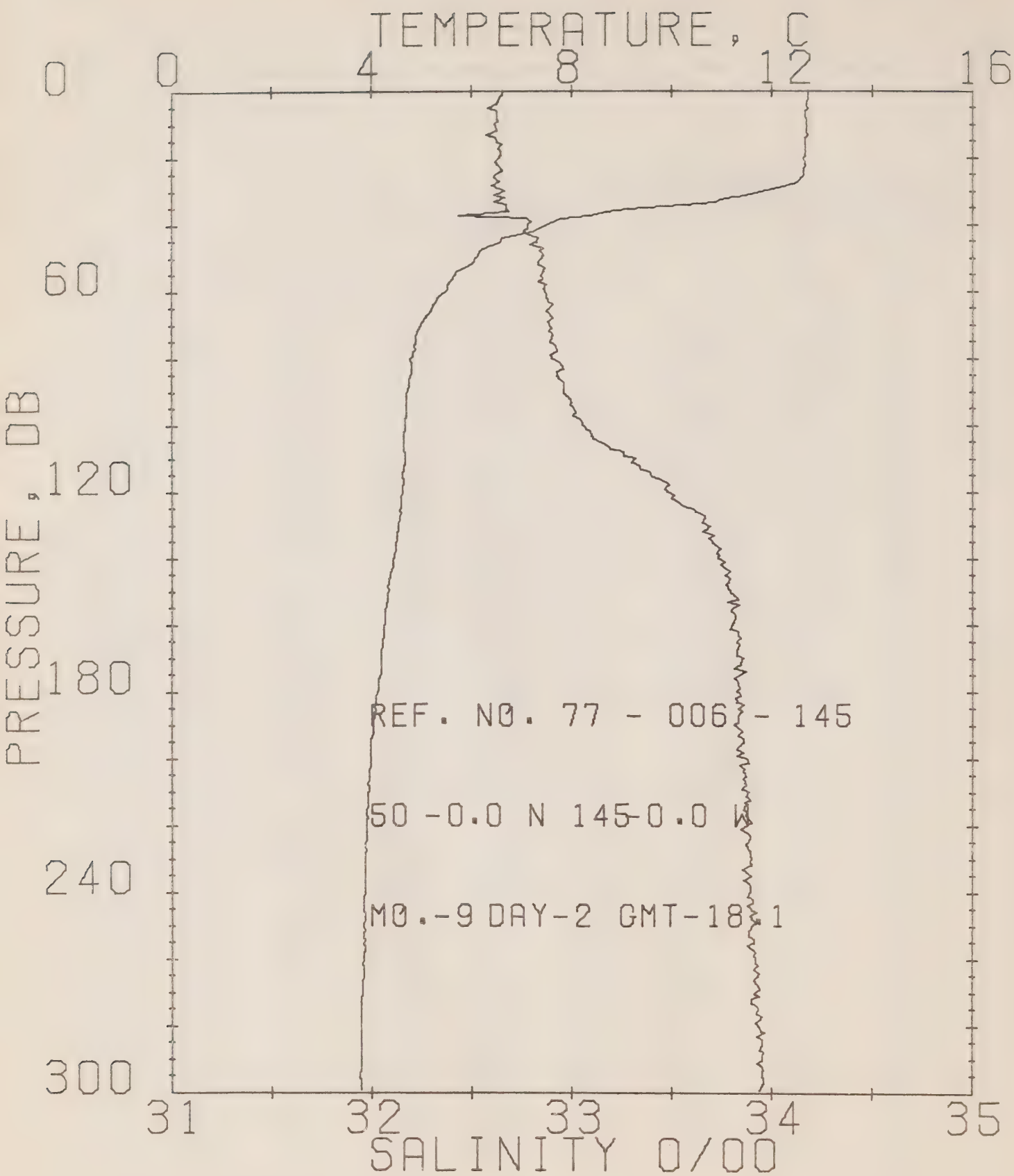
REFERENCE NO. 77- 6-127

DATE 30/ 8/77

POSITION 50- 30N 145- 00W

GMT 20.6

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.94	32.62	0	24.59	336.0	.00	.00	1498.
5	12.82	32.64	5	24.63	332.3	.17	.00	1497.
10	12.81	32.65	10	24.64	331.5	.33	.02	1497.
15	12.65	32.64	15	24.65	329.9	.50	.04	1497.
20	12.48	32.65	20	24.70	325.8	.66	.07	1497.
25	12.43	32.64	25	24.70	325.4	.83	.10	1496.
30	12.16	32.64	30	24.75	320.9	.99	.15	1496.
35	10.91	32.64	35	24.98	299.3	1.14	.20	1491.
40	7.43	32.83	40	25.68	232.9	1.28	.25	1479.
45	6.36	32.82	45	25.81	220.2	1.39	.30	1474.
50	5.70	32.89	50	25.95	206.7	1.49	.35	1472.
55	5.41	32.91	55	26.00	202.3	1.60	.41	1471.
60	5.25	32.94	60	26.04	198.5	1.70	.47	1470.
65	5.12	32.92	65	26.04	198.7	1.80	.53	1470.
70	5.08	32.96	70	26.07	195.3	1.89	.60	1470.
75	4.99	32.95	75	26.08	194.6	1.99	.67	1469.
80	4.89	32.95	80	26.08	194.4	2.09	.74	1469.
90	4.77	33.00	89	26.14	189.2	2.28	.91	1469.
100	4.63	33.05	99	26.20	183.6	2.47	1.09	1469.
110	4.62	33.23	109	26.34	170.5	2.64	1.28	1469.
120	4.65	33.41	119	26.48	157.4	2.81	1.47	1469.
130	4.64	33.59	129	26.62	143.6	2.96	1.67	1470.
140	4.60	33.77	139	26.77	130.0	3.10	1.85	1470.
150	4.54	33.81	149	26.81	126.3	3.22	2.04	1470.
160	4.35	33.85	159	26.85	122.9	3.35	2.24	1469.
170	4.29	33.83	169	26.85	122.4	3.47	2.45	1469.
180	4.19	33.85	179	26.87	120.2	3.60	2.67	1469.
190	4.09	33.83	189	26.87	120.5	3.72	2.90	1469.
200	4.01	33.83	199	26.88	120.0	3.84	3.13	1469.
210	4.00	33.88	209	26.92	116.3	3.96	3.38	1469.
220	3.94	33.86	218	26.91	117.2	4.07	3.64	1469.
230	3.91	33.87	228	26.92	116.3	4.19	3.91	1469.
240	3.89	33.89	238	26.94	114.3	4.30	4.18	1469.
250	3.86	33.91	248	26.96	112.8	4.42	4.47	1469.
260	3.81	33.89	258	26.94	114.1	4.53	4.76	1469.
270	3.80	33.92	268	26.97	111.4	4.64	5.07	1469.
280	3.80	33.92	278	26.97	111.4	4.76	5.38	1469.
290	3.79	33.94	288	26.99	109.9	4.87	5.70	1469.
300	3.79	33.97	298	27.02	107.6	4.98	6.03	1469.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6-145

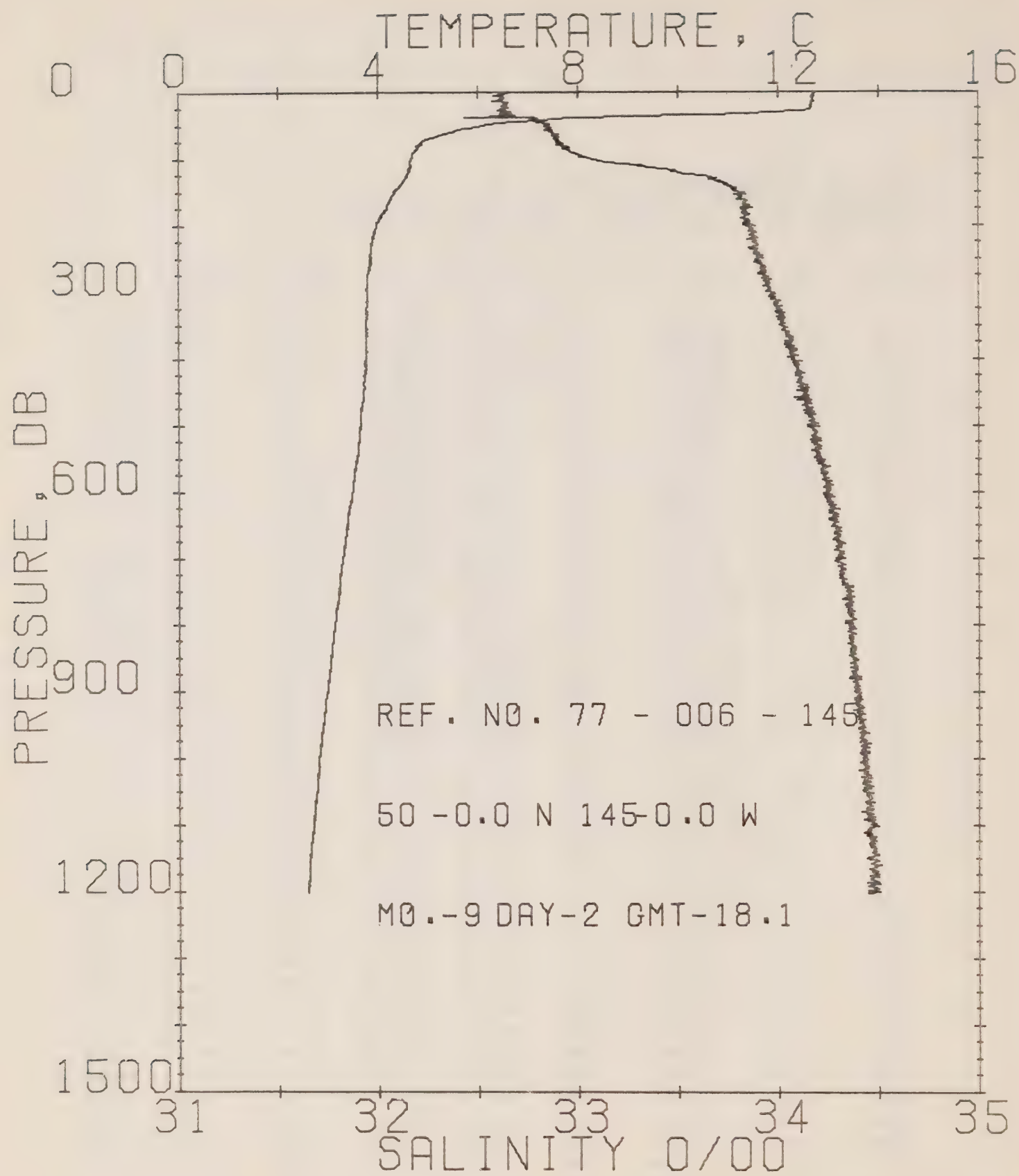
DATE 2/ 9/77

POSITION 50- .0N, 145- .0W

GMT 18.1

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.73	32.65	0	24.65	329.9	.00	.00	1497.
5	12.71	32.58	5	24.60	334.7	.17	.00	1497.
10	12.69	32.62	10	24.63	332.1	.33	.02	1497.
15	12.65	32.62	15	24.64	330.8	.50	.04	1497.
20	12.65	32.64	20	24.66	329.8	.66	.07	1497.
25	12.64	32.65	25	24.65	330.6	.83	.11	1497.
30	11.78	32.67	30	24.84	312.5	.99	.15	1494.
35	9.39	32.67	35	25.26	272.6	1.14	.20	1486.
40	7.49	32.78	40	25.63	237.3	1.27	.25	1479.
45	6.55	32.83	45	25.79	221.9	1.38	.30	1475.
50	6.09	32.86	50	25.87	214.2	1.49	.35	1473.
55	5.65	32.85	55	25.92	209.8	1.60	.41	1472.
60	5.46	32.87	60	25.96	206.1	1.70	.47	1471.
65	5.20	32.89	65	26.01	201.7	1.80	.53	1470.
70	4.98	32.89	70	26.03	199.2	1.90	.60	1469.
75	4.87	32.89	75	26.04	198.0	2.00	.63	1469.
80	4.78	32.90	80	26.06	196.6	2.10	.75	1469.
90	4.71	32.96	89	26.12	191.3	2.29	.92	1469.
100	4.66	33.06	99	26.20	183.8	2.48	1.10	1469.
110	4.68	33.31	109	26.40	164.7	2.66	1.29	1469.
120	4.61	33.46	119	26.54	151.6	2.81	1.48	1469.
130	4.54	33.68	129	26.71	135.7	2.96	1.66	1469.
140	4.43	33.73	139	26.76	131.1	3.09	1.84	1469.
150	4.32	33.80	149	26.82	125.2	3.22	2.03	1469.
160	4.25	33.81	159	26.84	123.6	3.34	2.22	1469.
170	4.19	33.86	169	26.88	119.3	3.46	2.43	1469.
180	4.10	33.83	179	26.87	120.7	3.58	2.64	1469.
190	4.02	33.82	189	26.87	121.0	3.70	2.87	1468.
200	3.98	33.87	199	26.91	116.6	3.82	3.11	1469.
210	3.92	33.88	209	26.93	115.1	3.94	3.35	1468.
220	3.90	33.88	218	26.93	115.2	4.05	3.60	1469.
230	3.87	33.90	228	26.95	113.7	4.17	3.87	1469.
240	3.86	33.89	238	26.94	113.9	4.28	4.14	1469.
250	3.85	33.91	248	26.96	112.8	4.40	4.42	1469.
260	3.84	33.92	258	26.97	111.8	4.51	4.72	1469.
270	3.82	33.92	268	26.97	111.4	4.62	5.02	1469.
280	3.78	33.95	278	26.98	110.4	4.73	5.33	1469.
290	3.78	33.95	288	27.00	109.1	4.84	5.65	1469.
300	3.78	33.96	298	27.00	109.0	4.95	5.98	1469.





## OFFSHORE OCEANOGRAPHY GROUP

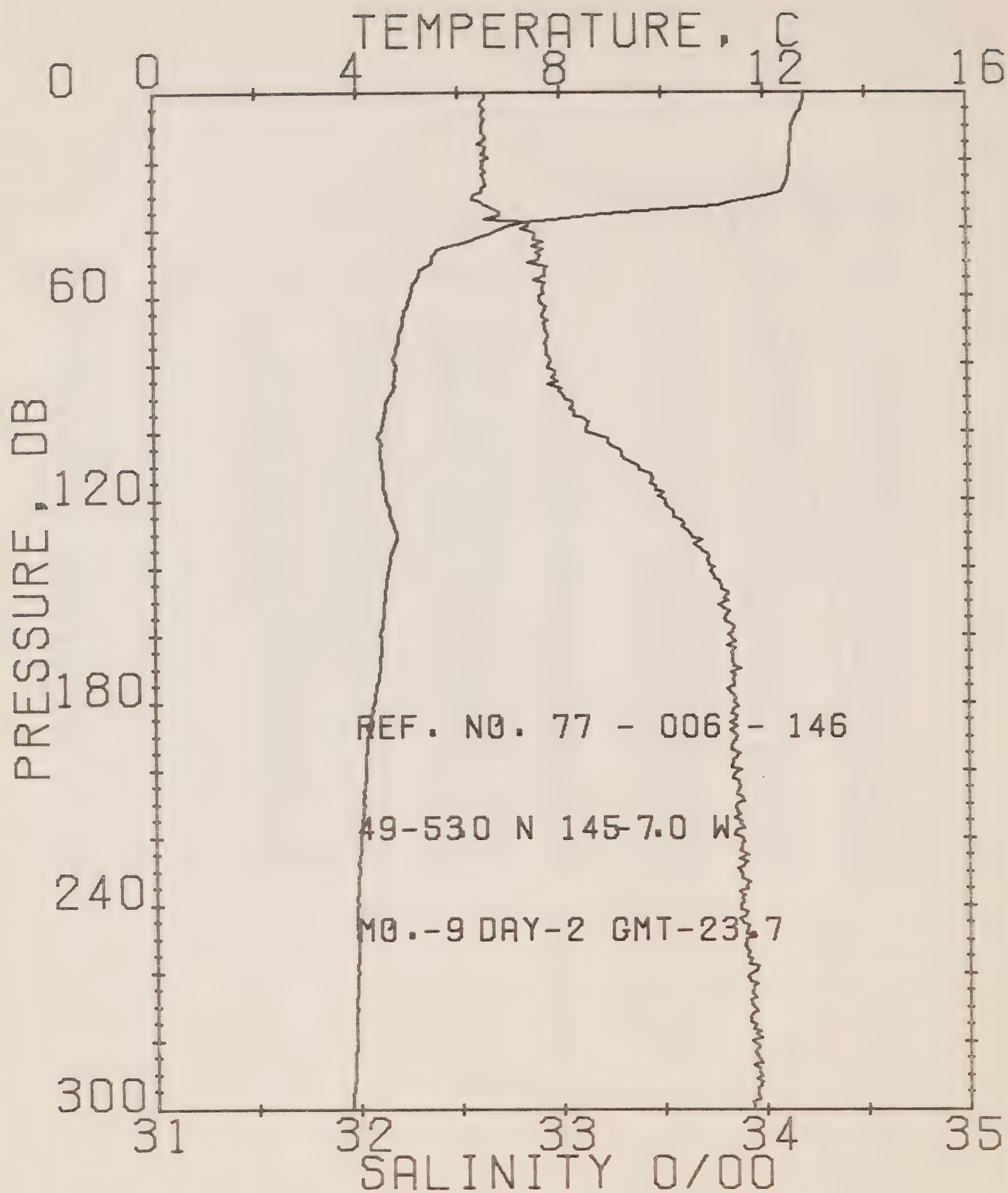
REFERENCE NO. 77- 6-145

DATE 2/ 9/77

POSITION 50- .0N, 145- .0W

GMT 18,1

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.73	32.65	0	24.65	329.9	.00	.00	1497.
50	6.09	32.86	50	25.87	214.2	1.49	.35	1473.
100	4.66	33.06	99	26.20	183.8	2.48	1.10	1469.
150	4.32	33.80	149	26.82	125.2	3.22	2.03	1469.
200	3.98	33.87	199	26.91	116.6	3.82	3.11	1469.
250	3.85	33.91	248	26.96	112.8	4.40	4.42	1469.
300	3.78	33.96	298	27.00	109.0	4.95	5.98	1469.
350	3.77	34.01	347	27.05	105.2	5.48	7.73	1470.
400	3.75	34.07	397	27.10	100.6	5.99	9.68	1471.
450	3.71	34.14	446	27.15	95.6	6.48	11.80	1472.
500	3.64	34.15	496	27.17	94.5	6.95	14.09	1472.
550	3.57	34.20	545	27.21	90.6	7.41	16.54	1473.
600	3.48	34.25	595	27.27	85.9	7.85	19.11	1473.
650	3.37	34.28	644	27.30	83.3	8.27	21.80	1474.
700	3.28	34.33	694	27.35	78.6	8.68	24.59	1474.
750	3.21	34.37	743	27.38	75.6	9.07	27.51	1475.
800	3.11	34.36	793	27.38	75.6	9.45	30.51	1475.
850	3.04	34.38	842	27.41	73.3	9.83	33.65	1476.
900	2.97	34.40	891	27.43	71.8	10.19	36.91	1476.
950	2.88	34.42	941	27.45	69.7	10.55	40.25	1477.
1000	2.81	34.43	990	27.47	68.6	10.89	43.67	1477.
1050	2.76	34.43	1040	27.47	68.1	11.23	47.20	1478.
1100	2.69	34.49	1089	27.53	63.3	11.56	50.82	1479.
1150	2.62	34.45	1138	27.51	65.3	11.88	54.52	1479.
1200	2.59	34.50	1188	27.55	61.7	12.20	58.33	1480.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6-146

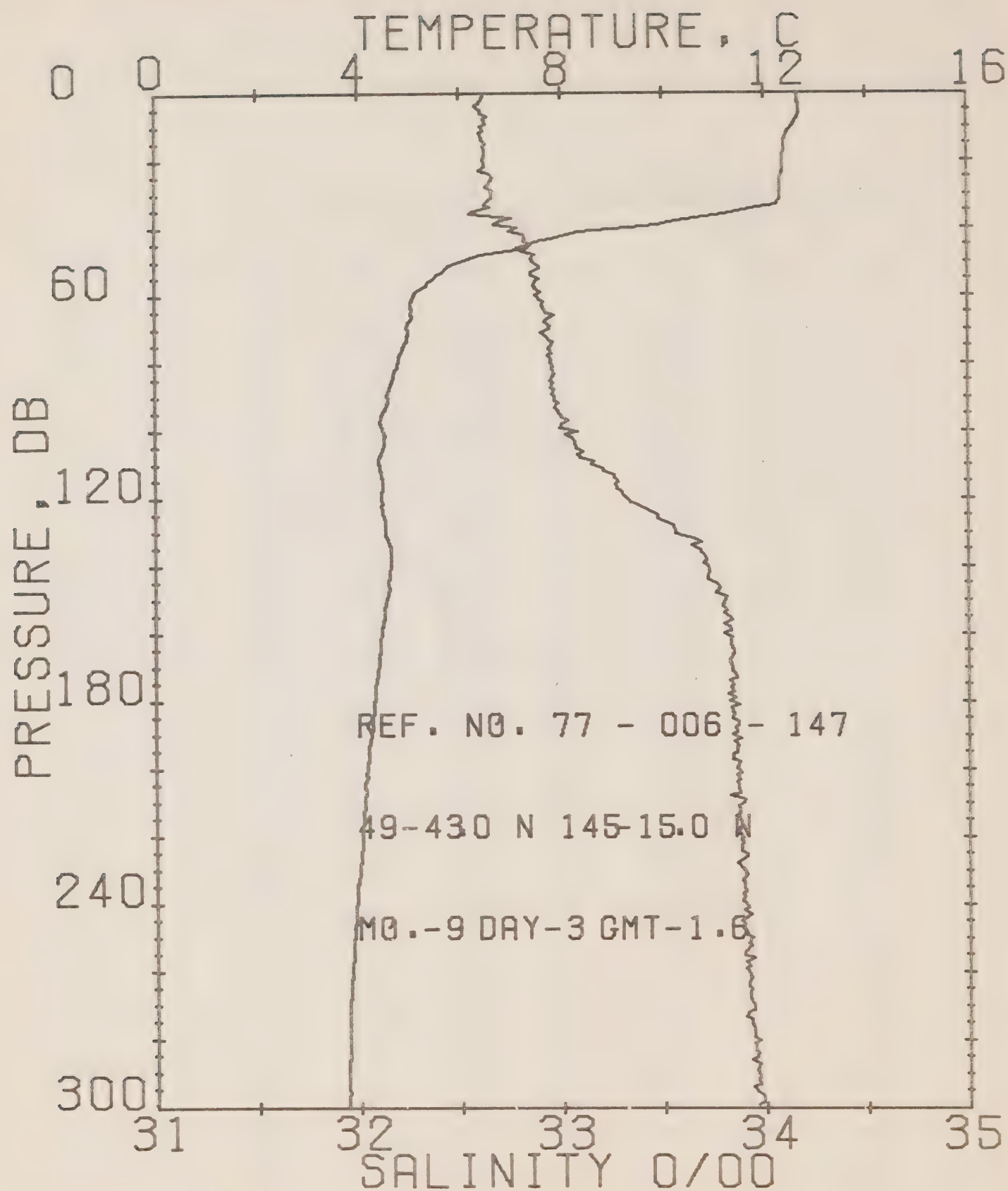
DATE 2/ 9/77

POSITION 49-53.0N, 145- 7.0W

GMT 23.7

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.79	32.63	0	24.62	332.6	.00	.00	1497.
5	12.74	32.63	5	24.63	331.8	.17	.00	1497.
10	12.67	32.62	10	24.66	329.5	.33	.02	1497.
15	12.64	32.61	15	24.65	330.2	.50	.04	1497.
20	12.62	32.60	20	24.67	328.5	.66	.07	1497.
25	12.49	32.63	25	24.68	327.5	.82	.10	1497.
30	12.20	32.56	30	24.70	325.9	.99	.13	1496.
35	9.49	32.70	35	25.20	272.3	1.14	.20	1486.
40	6.62	32.61	40	25.74	226.4	1.26	.25	1476.
45	5.79	32.67	45	25.92	209.3	1.37	.29	1472.
50	5.46	32.64	50	25.94	207.8	1.47	.34	1471.
55	5.18	32.67	55	26.00	202.5	1.57	.40	1470.
60	5.00	32.91	60	26.03	199.0	1.67	.46	1469.
65	4.93	32.92	65	26.06	196.8	1.77	.52	1469.
70	4.86	32.93	70	26.03	195.1	1.87	.59	1469.
75	4.78	32.93	75	26.09	193.9	1.97	.66	1469.
80	4.77	32.95	80	26.10	193.0	2.06	.73	1469.
90	4.60	33.02	89	26.16	185.4	2.25	.96	1468.
100	4.43	33.13	99	26.26	175.9	2.43	1.07	1468.
110	4.49	33.38	109	26.47	157.9	2.60	1.25	1469.
120	4.57	33.31	119	26.57	149.1	2.75	1.43	1469.
130	4.76	33.63	129	26.64	141.9	2.90	1.61	1470.
140	4.61	33.73	139	26.75	131.7	3.03	1.80	1470.
150	4.51	33.62	149	26.82	125.6	3.16	1.99	1470.
160	4.45	33.62	159	26.83	124.6	3.29	2.19	1470.
170	4.42	33.67	169	26.87	120.6	3.41	2.40	1470.
180	4.30	33.65	179	26.86	121.3	3.53	2.62	1470.
190	4.17	33.66	189	26.86	119.2	3.65	2.84	1469.
200	4.12	33.67	199	26.90	117.7	3.77	3.06	1469.
210	4.10	33.66	206	26.89	118.4	3.89	3.30	1469.
220	4.03	33.66	216	26.91	116.6	4.01	3.59	1469.
230	3.99	33.68	228	26.92	116.5	4.13	3.85	1469.
240	3.95	33.67	238	26.92	116.5	4.24	4.13	1469.
250	3.97	33.90	248	26.94	114.6	4.36	4.42	1469.
260	3.95	33.93	256	26.96	112.5	4.47	4.71	1469.
270	3.93	33.93	266	26.97	112.0	4.59	5.02	1470.
280	3.92	33.93	276	26.97	112.2	4.69	5.33	1470.
290	3.89	33.97	286	27.00	108.9	4.80	5.66	1470.
300	3.64	33.94	296	26.96	110.9	4.91	5.96	1470.





## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8-147

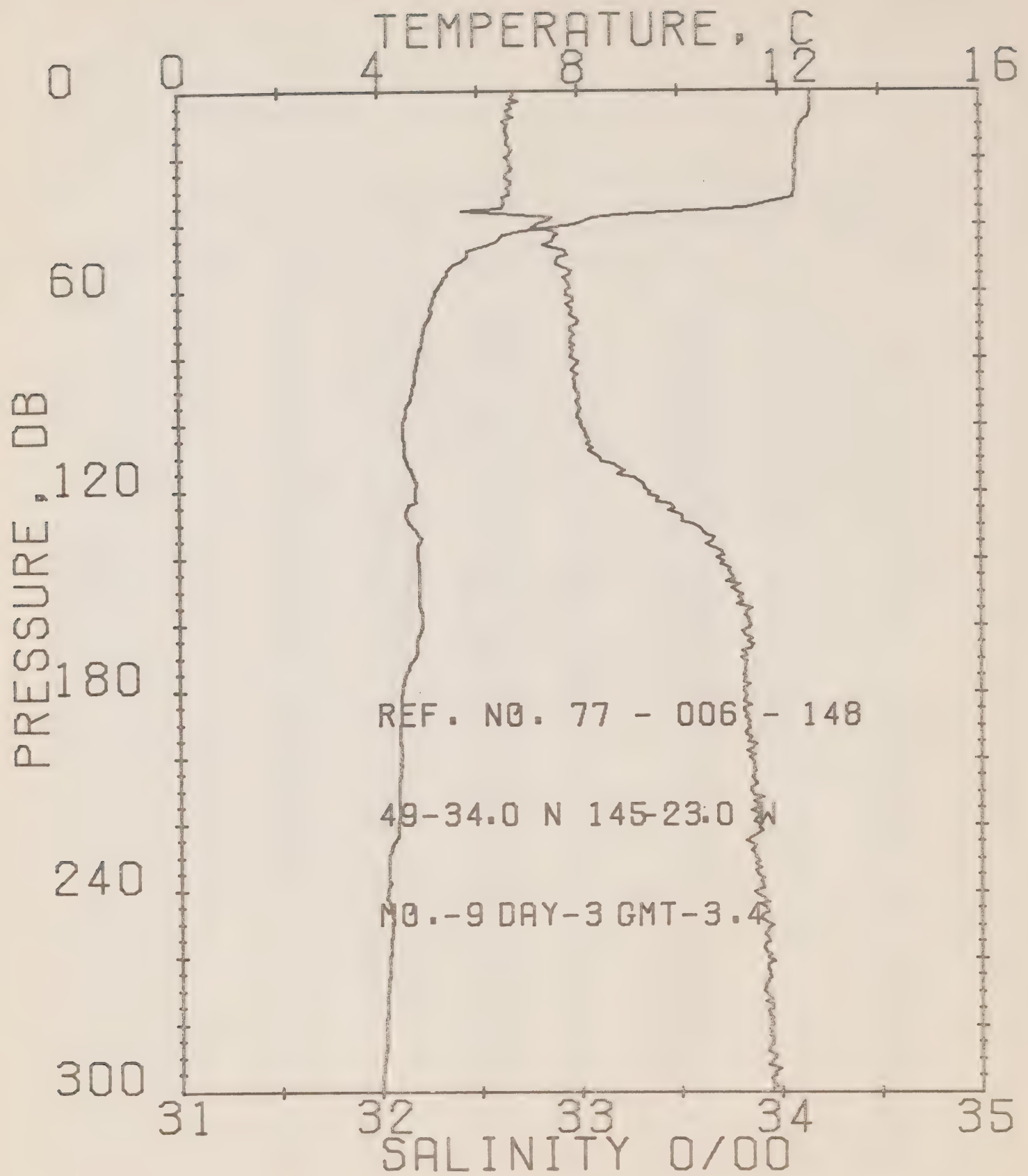
DATE 3/ 9/77

POSITION 49-45.0N, 145-15.0W

GMT

1.6

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.08	32.02	0	24.33	331.5	.00	.00	1497.
5	12.09	32.00	5	24.62	333.1	.17	.00	1497.
10	12.05	32.01	10	24.65	330.3	.33	.02	1497.
15	12.09	32.03	15	24.70	325.6	.50	.04	1490.
20	12.08	32.02	20	24.89	326.3	.66	.07	1490.
25	12.02	32.00	25	24.74	322.1	.82	.10	1490.
30	12.01	32.00	30	24.74	322.3	.98	.10	1490.
35	11.08	32.09	35	24.82	314.3	1.14	.20	1494.
40	9.05	32.70	40	25.30	263.0	1.20	.20	1400.
45	7.40	32.05	45	25.09	231.2	1.41	.31	1479.
50	0.01	32.00	50	25.88	213.1	1.52	.30	1473.
55	0.40	32.09	55	25.90	204.2	1.63	.42	1471.
60	0.10	32.00	60	26.01	201.2	1.73	.40	1470.
65	0.05	32.93	65	26.05	197.4	1.83	.54	1469.
70	4.90	32.94	70	26.07	195.5	1.92	.61	1469.
75	4.09	32.94	75	26.05	194.3	2.02	.60	1409.
80	4.78	32.95	80	26.10	192.9	2.12	.70	1409.
90	4.07	32.97	90	26.14	189.4	2.31	.92	1468.
100	4.00	30.00	99	26.21	182.0	2.50	1.11	1400.
110	4.42	30.15	109	26.29	174.7	2.68	1.30	1400.
120	4.46	30.02	119	26.42	162.3	2.84	1.49	1400.
130	4.55	30.00	129	26.61	145.0	3.00	1.09	1409.
140	4.03	30.71	139	26.72	134.5	3.13	1.00	1470.
150	4.55	30.01	149	26.80	126.8	3.27	2.07	1470.
160	4.46	30.00	159	26.01	120.1	3.30	2.27	1470.
170	4.09	30.04	169	26.05	123.0	3.51	2.40	1470.
180	4.00	30.00	179	26.35	123.0	3.60	2.70	1409.
190	4.24	30.04	189	26.80	121.3	3.76	2.92	1409.
200	4.15	30.00	199	26.89	118.9	3.80	3.10	1469.
210	4.10	30.09	209	26.92	116.3	4.00	3.40	1409.
220	4.00	30.00	218	26.92	116.5	4.11	3.00	1409.
230	4.01	30.09	220	26.95	115.4	4.23	3.90	1409.
240	3.93	30.90	230	26.94	113.9	4.34	4.21	1409.
250	3.08	30.90	240	26.97	111.5	4.46	4.49	1409.
260	3.03	30.91	250	26.90	112.4	4.57	4.70	1409.
270	3.79	30.94	260	26.98	110.3	4.60	5.00	1409.
280	3.78	30.90	270	27.00	108.5	4.70	5.00	1409.
290	3.77	30.90	280	27.00	108.7	4.90	5.71	1409.
300	3.77	30.90	290	27.01	108.4	5.01	6.04	1409.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 17- 6-148

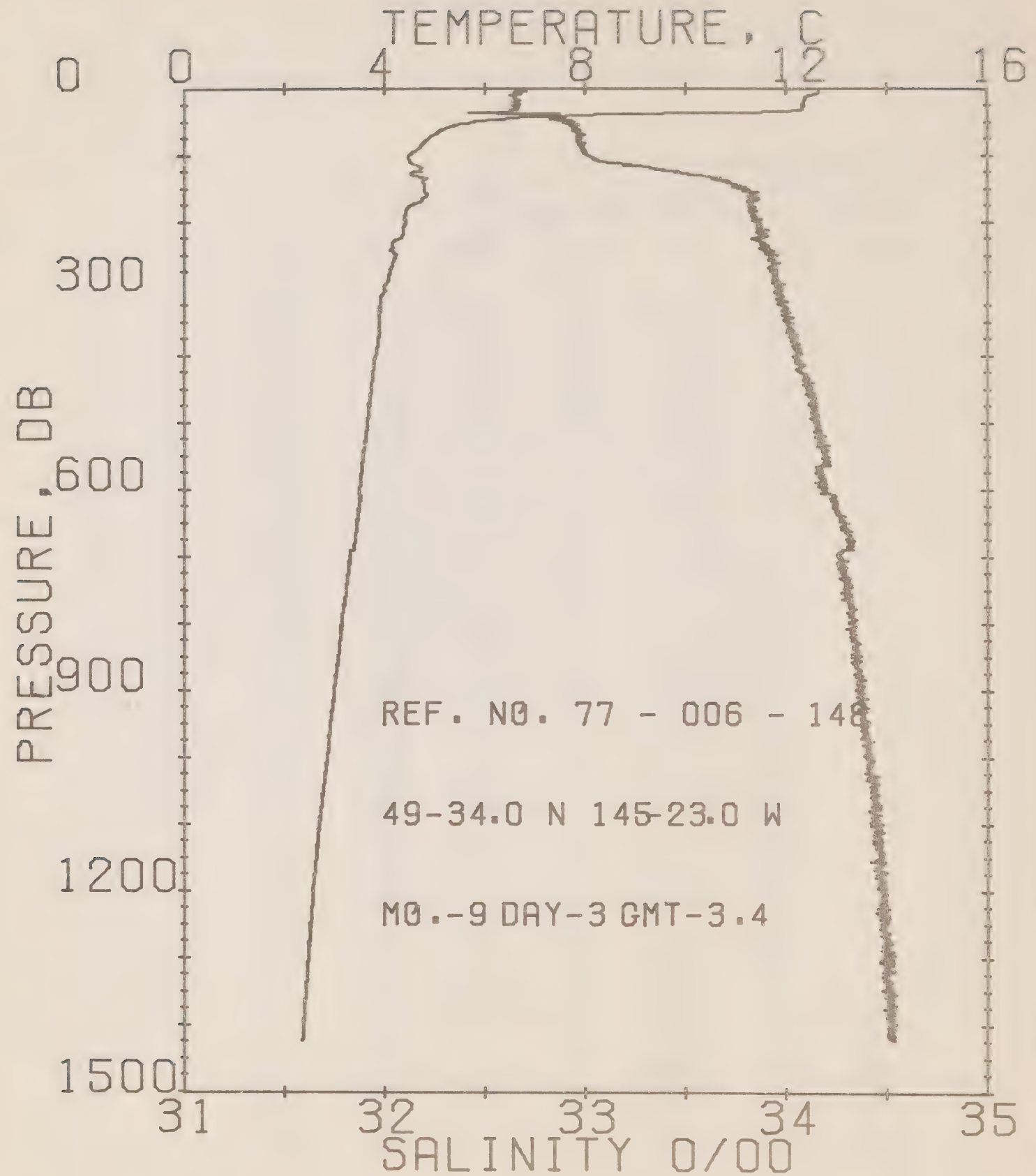
DATE 3/ 9/77

POSITION 49-54.0N, 145-23.0W

GMT 3.4

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA J	POT. EN	SOUND
0	12.63	32.68	0	24.69	325.9	.00	.00	1497.
5	12.64	32.67	5	24.68	327.2	.16	.00	1497.
10	12.44	32.65	10	24.70	325.0	.33	.02	1496.
15	12.37	32.65	15	24.72	324.0	.40	.04	1496.
20	12.34	32.64	20	24.72	323.9	.65	.07	1496.
25	12.33	32.64	25	24.72	323.8	.81	.10	1496.
30	12.31	32.66	30	24.74	322.4	.97	.13	1496.
35	11.39	32.62	35	24.86	309.0	1.13	.20	1495.
40	7.92	32.80	40	25.56	241.7	1.27	.25	1486.
45	6.37	32.83	45	25.65	216.1	1.38	.30	1474.
50	5.76	32.90	50	25.95	206.8	1.48	.35	1472.
55	5.39	32.96	55	26.04	198.7	1.58	.41	1471.
60	5.16	32.94	60	26.05	197.3	1.68	.46	1470.
65	5.05	32.97	65	26.06	194.4	1.78	.50	1470.
70	4.93	32.99	70	26.12	191.1	1.88	.55	1469.
75	4.86	32.96	75	26.10	192.7	1.97	.60	1469.
80	4.79	32.96	80	26.11	192.1	2.07	.74	1469.
90	4.66	32.99	89	26.14	188.5	2.26	.90	1466.
100	4.48	33.01	99	26.16	185.5	2.45	1.06	1466.
110	4.34	33.10	109	26.24	179.4	2.63	1.20	1463.
120	4.72	33.34	119	26.42	162.9	2.80	1.43	1470.
130	4.63	33.56	129	26.60	145.9	2.95	1.66	1470.
140	4.79	33.69	139	26.66	138.0	3.09	1.87	1471.
150	4.81	33.78	149	26.75	131.8	3.23	2.07	1471.
160	4.64	33.35	159	26.80	126.9	3.36	2.27	1471.
170	4.69	33.61	169	26.79	128.1	3.49	2.46	1471.
180	4.44	33.62	179	26.83	124.8	3.61	2.71	1470.
190	4.41	33.64	189	26.85	123.2	3.73	2.87	1470.
200	4.42	33.65	199	26.85	122.7	3.86	3.13	1470.
210	4.38	33.65	209	26.86	122.1	3.99	3.44	1470.
220	4.36	33.39	216	26.89	118.9	4.10	3.76	1470.
230	4.15	33.67	226	26.90	118.2	4.22	3.96	1470.
240	4.13	33.68	236	26.91	117.6	4.33	4.26	1470.
250	4.21	33.95	246	26.96	113.1	4.45	4.56	1470.
260	4.17	33.93	256	26.94	114.4	4.56	4.84	1470.
270	4.12	33.91	266	26.95	115.4	4.68	5.15	1470.
280	4.08	33.95	276	26.97	112.3	4.79	5.47	1470.
290	4.05	33.97	286	26.96	110.6	4.90	5.80	1470.
300	4.00	33.97	296	26.99	109.9	5.01	6.16	1470.





## OFFSHORE OCEANOGRAPHY GROUP

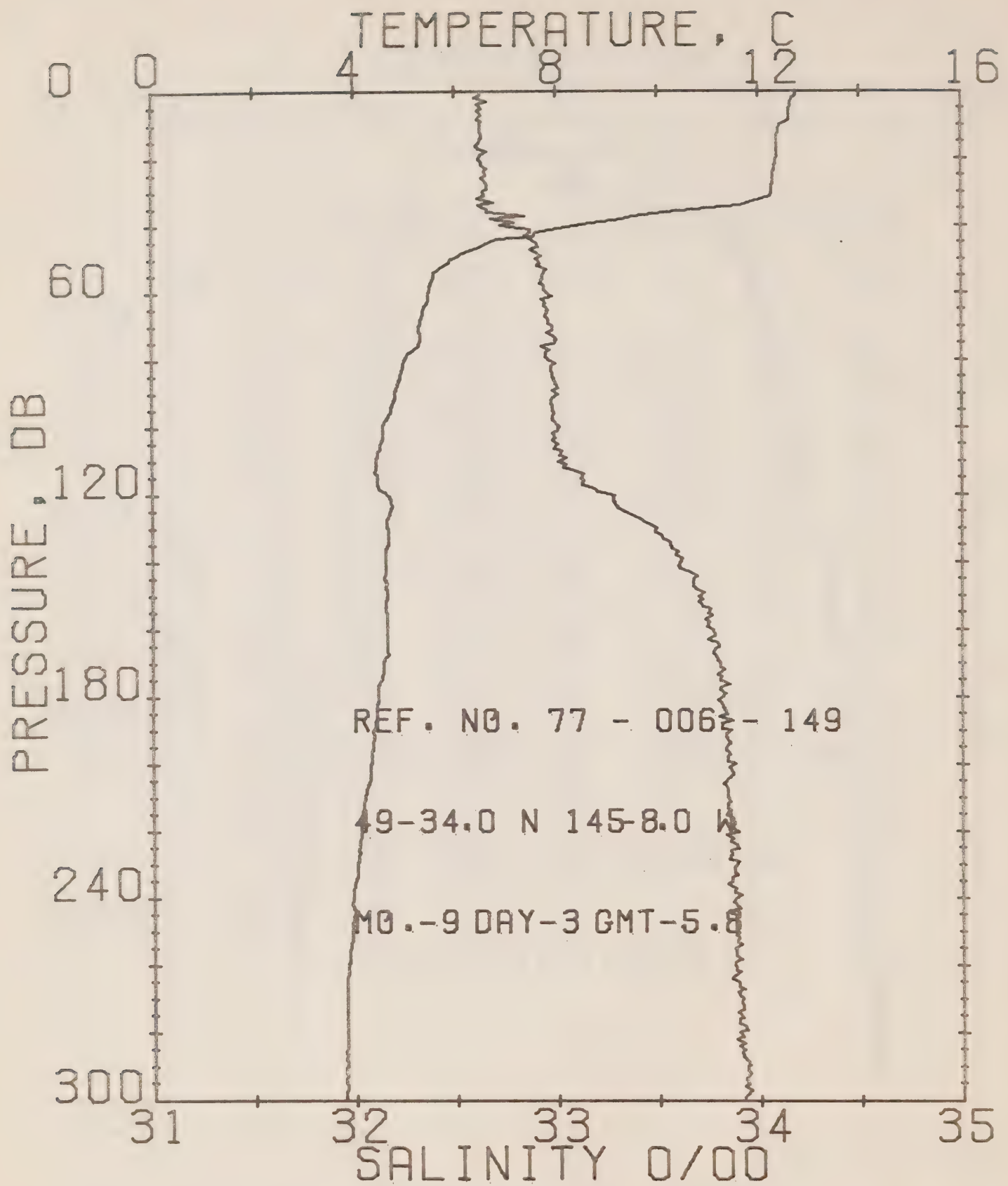
REFERENCE NO. 77- 6-148

DATE 3/ 9/77

POSITION 49-34.0N, 145-23.0W

GMT 3.4

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA J	POT. EN	SOUND
0	12.63	32.88	0	24.89	325.9	.00	.00	1497.
50	5.76	32.90	50	25.95	206.8	1.48	.35	1472.
100	4.48	33.01	99	26.18	185.5	2.45	1.00	1468.
150	4.81	33.76	149	26.75	131.8	3.23	2.07	1471.
200	4.42	33.85	199	26.85	122.7	3.86	3.18	1470.
250	4.21	33.95	248	26.90	113.1	4.45	4.55	1470.
300	4.00	33.97	298	26.99	109.9	5.01	6.10	1470.
350	3.88	34.00	347	27.03	107.2	5.56	7.92	1471.
400	3.82	34.05	397	27.08	102.8	6.08	9.92	1471.
450	3.73	34.11	446	27.13	98.2	6.50	12.09	1472.
500	3.66	34.15	496	27.17	94.5	7.06	14.41	1472.
550	3.57	34.19	545	27.21	91.0	7.52	16.89	1473.
600	3.50	34.18	595	27.21	91.3	7.98	19.57	1473.
650	3.45	34.30	644	27.31	82.4	8.41	22.34	1474.
700	3.30	34.26	694	27.29	84.4	8.83	25.10	1474.
750	3.24	34.31	743	27.34	80.2	9.23	28.19	1475.
800	3.14	34.35	793	27.36	77.9	9.63	31.31	1475.
850	3.07	34.38	842	27.39	75.5	10.02	34.55	1476.
900	2.99	34.37	892	27.40	74.2	10.39	37.89	1476.
950	2.91	34.39	941	27.43	71.8	10.75	41.33	1477.
1000	2.85	34.42	990	27.46	69.7	11.11	44.86	1478.
1050	2.76	34.44	1040	27.48	67.4	11.45	48.48	1478.
1100	2.69	34.44	1089	27.49	67.1	11.79	52.15	1479.
1150	2.63	34.48	1135	27.52	63.7	12.12	55.87	1479.
1200	2.56	34.48	1180	27.54	62.7	12.43	59.69	1480.
1250	2.52	34.49	1237	27.54	62.4	12.75	63.59	1480.
1300	2.48	34.51	1286	27.56	60.7	13.05	67.50	1481.
1350	2.42	34.51	1336	27.57	60.1	13.36	71.67	1482.
1400	2.37	34.51	1385	27.57	59.5	13.65	75.82	1482.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6-149

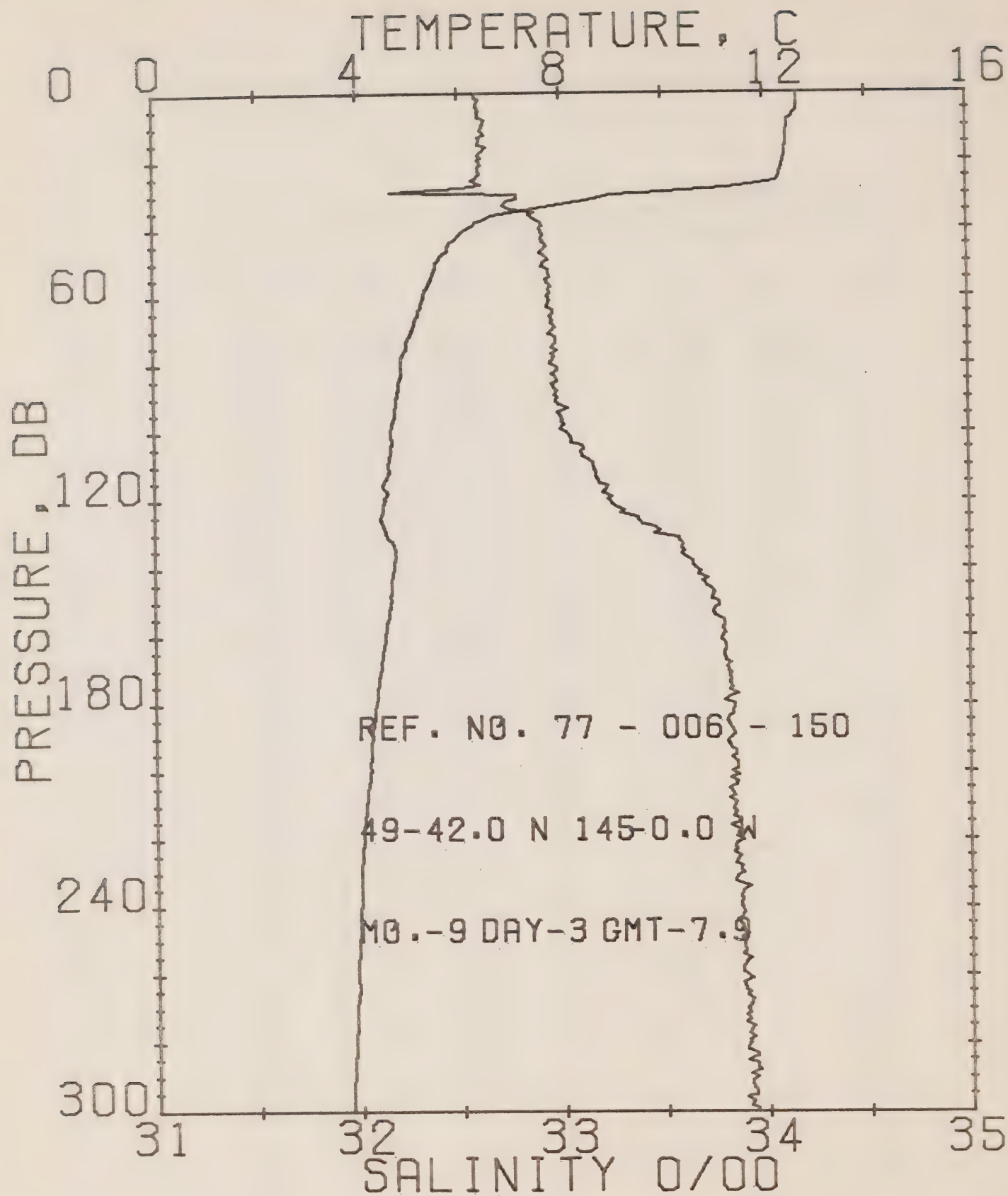
DATE 3/ 9/77

POSITION 49-34.0N, 145- 8.0W

GMT 5.8

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.74	32.63	0	24.63	331.8	.00	.00	1497.
5	12.62	32.64	5	24.66	329.2	.17	.00	1497.
10	12.44	32.63	10	24.69	326.5	.33	.02	1496.
15	12.37	32.63	15	24.70	325.6	.49	.04	1496.
20	12.36	32.62	20	24.70	325.8	.66	.07	1496.
25	12.29	32.60	25	24.74	322.2	.82	.10	1496.
30	12.27	32.64	30	24.73	322.9	.98	.15	1496.
35	10.88	32.65	35	24.99	297.9	1.14	.20	1491.
40	8.40	32.73	40	25.46	253.6	1.27	.25	1482.
45	6.63	32.90	45	25.84	217.5	1.39	.30	1476.
50	5.93	32.90	50	25.93	209.2	1.49	.35	1473.
55	5.57	32.93	55	26.00	202.5	1.60	.41	1471.
60	5.48	32.95	60	26.02	200.0	1.70	.47	1471.
65	5.37	32.96	65	26.04	198.3	1.80	.53	1471.
70	5.29	32.98	70	26.06	196.3	1.90	.60	1471.
75	5.29	32.99	75	26.07	195.3	1.99	.67	1471.
80	4.99	32.96	80	26.08	194.4	2.09	.75	1470.
90	4.61	33.00	89	26.14	189.1	2.28	.92	1469.
100	4.56	33.01	99	26.17	186.2	2.47	1.10	1468.
110	4.42	33.02	109	26.19	184.2	2.66	1.30	1468.
120	4.68	33.27	119	26.36	168.3	2.84	1.51	1469.
130	4.67	33.49	129	26.54	151.4	3.00	1.71	1470.
140	4.61	33.61	139	26.64	141.8	3.15	1.91	1470.
150	4.64	33.71	149	26.71	135.2	3.28	2.12	1470.
160	4.64	33.76	159	26.76	130.9	3.42	2.33	1470.
170	4.57	33.61	169	26.80	127.1	3.55	2.55	1470.
180	4.45	33.62	179	26.82	125.1	3.67	2.77	1470.
190	4.36	33.66	189	26.86	121.6	3.80	3.01	1470.
200	4.30	33.68	199	26.86	119.4	3.92	3.25	1470.
210	4.19	33.64	209	26.87	121.2	4.04	3.50	1469.
220	4.11	33.69	213	26.91	116.7	4.16	3.75	1469.
230	4.03	33.68	223	26.92	116.6	4.28	4.03	1469.
240	3.94	33.69	233	26.93	115.1	4.39	4.31	1469.
250	3.92	33.69	246	26.93	114.9	4.51	4.56	1469.
260	3.64	33.87	258	26.93	115.4	4.62	4.90	1469.
270	3.62	33.92	268	26.97	112.0	4.74	5.21	1469.
280	3.61	33.90	278	26.95	113.4	4.85	5.53	1469.
290	3.60	33.94	286	26.98	110.4	4.96	5.85	1469.
300	3.80	33.92	298	26.97	111.8	5.07	6.19	1469.





## OFFSHORE OCEANOGRAPHY GROUP

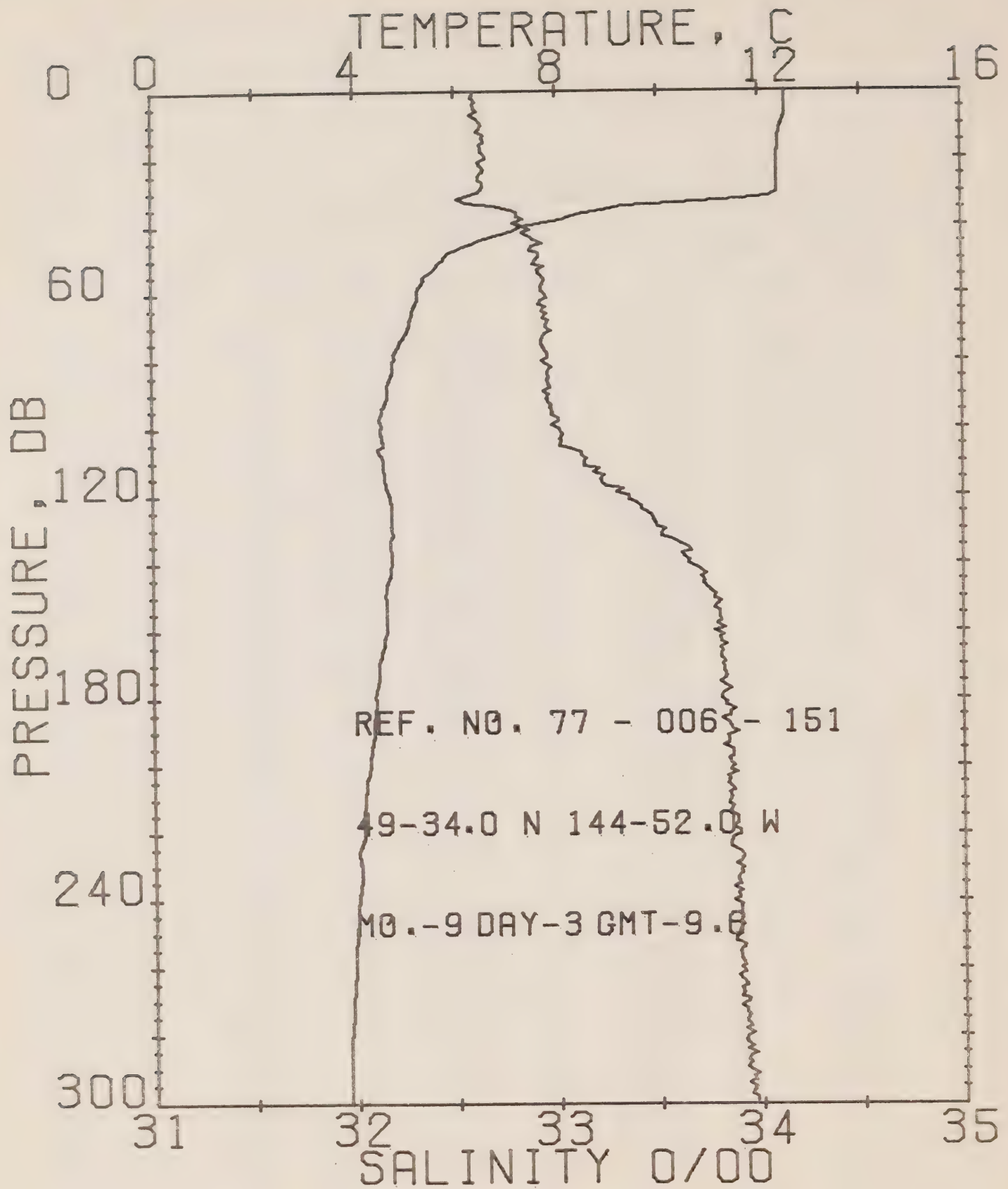
REFERENCE NO. 77- 6-150

DATE 3/ 9/77

POSITION 49-42.0N, 145- .0W

GMT 7.9

PRESS	TEMP	SAL	DEPTH	SIGMA T	SWA	DELTA D	POT. EN	SOUND
0	12.67	32.69	0	24.61	333.4	.00	.00	1497.
5	12.66	32.61	5	24.63	332.0	.17	.00	1497.
10	12.47	32.62	10	24.67	327.9	.33	.02	1496.
15	12.44	32.60	15	24.67	328.8	.50	.04	1496.
20	12.41	32.60	20	24.68	328.0	.66	.07	1496.
25	12.29	32.59	25	24.68	327.2	.82	.10	1496.
30	9.64	32.75	30	25.36	261.2	.98	.15	1484.
35	6.99	32.66	35	25.76	224.5	1.10	.19	1477.
40	6.18	32.90	40	25.96	211.6	1.21	.23	1474.
45	5.79	32.93	45	25.97	205.3	1.32	.26	1472.
50	5.56	32.92	50	25.99	203.0	1.42	.30	1471.
55	5.44	32.93	55	26.01	201.2	1.52	.36	1471.
60	5.31	32.94	60	26.03	199.3	1.62	.44	1471.
65	5.20	32.96	65	26.06	196.3	1.72	.50	1470.
70	5.08	32.96	70	26.07	195.3	1.82	.57	1470.
75	4.96	32.95	75	26.08	194.5	1.91	.64	1469.
80	4.85	32.95	80	26.09	193.7	2.01	.72	1469.
90	4.76	32.98	89	26.12	190.6	2.20	.80	1469.
100	4.65	33.02	99	26.17	186.6	2.37	1.00	1469.
110	4.59	33.15	109	26.28	175.9	2.57	1.20	1469.
120	4.52	33.23	119	26.35	169.4	2.74	1.40	1469.
130	4.54	33.45	129	26.53	152.8	2.90	1.60	1469.
140	4.68	33.55	139	26.67	139.7	3.05	1.80	1470.
150	4.61	33.76	149	26.76	130.8	3.18	2.00	1470.
160	4.50	33.79	159	26.79	127.8	3.31	2.27	1470.
170	4.40	33.81	169	26.82	125.2	3.44	2.40	1470.
180	4.31	33.84	179	26.85	122.3	3.56	2.70	1470.
190	4.23	33.83	189	26.86	122.1	3.69	2.90	1469.
200	4.20	33.85	199	26.86	121.7	3.81	3.17	1469.
210	4.11	33.84	209	26.88	120.2	3.93	3.40	1469.
220	4.04	33.87	218	26.91	117.0	4.05	3.60	1469.
230	4.00	33.88	228	26.92	116.1	4.16	3.90	1469.
240	3.99	33.87	238	26.91	117.3	4.20	4.24	1469.
250	3.95	33.88	248	26.93	115.7	4.40	4.50	1469.
260	3.92	33.89	258	26.94	114.8	4.51	4.80	1469.
270	3.89	33.89	268	26.94	114.4	4.53	5.14	1469.
280	3.87	33.91	278	26.95	113.5	4.74	5.40	1469.
290	3.83	33.95	288	26.96	111.0	4.85	5.70	1469.
300	3.81	33.91	298	26.97	112.3	4.97	6.12	1469.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8-151

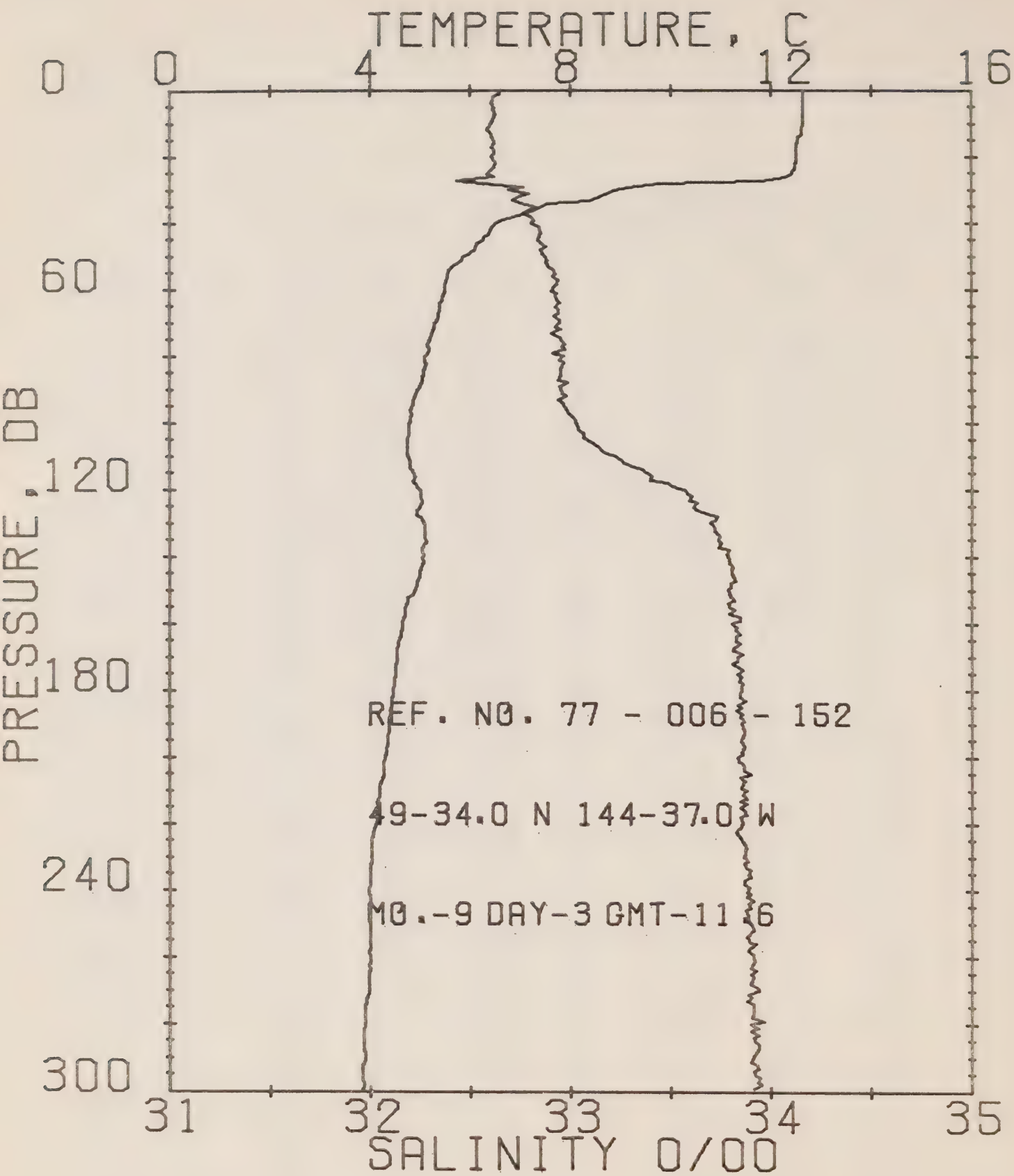
DATE 3/ 9/77

POSITION 49-34.0N, 144-52.0W

GMT 9.6

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.52	32.80	0	24.65	330.1	.00	.00	1493.
5	12.53	32.80	5	24.65	330.2	.17	.00	1490.
10	12.40	32.83	10	24.69	326.5	.33	.02	1490.
15	12.40	32.85	15	24.71	324.5	.49	.04	1490.
20	12.38	32.85	20	24.72	323.8	.66	.07	1490.
25	12.37	32.82	25	24.70	320.1	.82	.10	1490.
30	12.37	32.82	30	24.70	326.2	.98	.13	1490.
35	8.94	32.76	35	25.46	259.1	1.13	.20	1484.
40	7.55	32.83	40	25.69	231.9	1.25	.23	1478.
45	6.34	32.92	45	25.89	212.1	1.37	.24	1474.
50	5.75	32.90	50	25.95	207.1	1.47	.35	1472.
55	5.58	32.93	55	26.01	200.8	1.57	.40	1471.
60	5.26	32.94	60	26.04	198.8	1.67	.40	1470.
65	5.15	32.93	65	26.04	198.2	1.77	.50	1470.
70	5.07	32.95	70	26.07	196.0	1.87	.55	1470.
75	4.87	32.95	75	26.07	195.6	1.97	.60	1469.
80	4.76	32.93	80	26.09	194.1	2.06	.74	1469.
90	4.63	32.95	89	26.12	191.0	2.26	.90	1465.
100	4.51	33.01	99	26.17	185.9	2.44	1.09	1468.
110	4.56	33.14	109	26.27	176.8	2.63	1.28	1463.
120	4.68	33.35	119	26.42	162.3	2.80	1.48	1469.
130	4.73	33.53	129	26.57	148.9	2.95	1.68	1470.
140	4.71	33.65	139	26.66	140.2	3.10	1.88	1470.
150	4.60	33.78	149	26.77	129.6	3.23	2.08	1470.
160	4.62	33.78	159	26.77	129.7	3.36	2.28	1470.
170	4.46	33.32	169	26.82	125.3	3.40	2.45	1470.
180	4.39	33.81	179	26.82	125.3	3.61	2.71	1470.
190	4.35	33.89	189	26.89	119.0	3.73	2.94	1470.
200	4.27	33.37	199	26.88	119.9	3.85	3.12	1470.
210	4.16	33.34	209	26.87	120.4	3.97	3.44	1469.
220	4.13	33.69	218	26.92	116.4	4.09	3.70	1470.
230	4.09	33.90	228	26.92	115.9	4.21	3.97	1469.
240	4.03	33.80	238	26.90	117.8	4.33	4.23	1469.
250	3.98	33.89	248	26.93	115.3	4.44	4.53	1469.
260	3.95	33.90	258	26.94	114.8	4.56	4.80	1469.
270	3.90	33.93	268	26.97	112.0	4.67	5.14	1469.
280	3.85	33.93	273	26.97	111.3	4.72	5.43	1469.
290	3.84	33.93	288	26.98	111.2	4.89	5.78	1469.
300	3.84	33.96	298	27.02	107.5	5.00	6.11	1470.





## OFFSHORE OCEANOGRAPHY GROUP

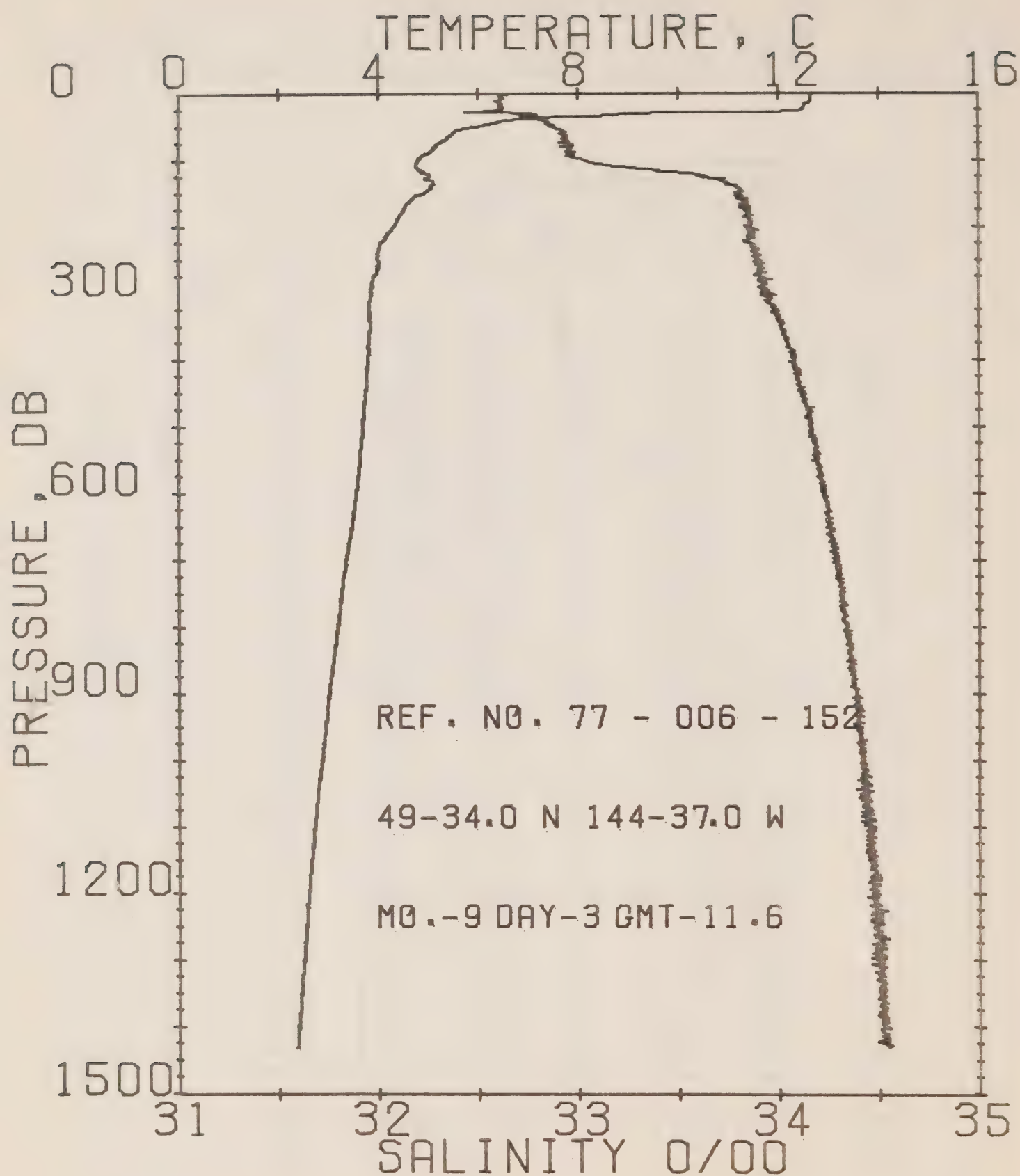
REFERENCE NO. 77- 5-152

DATE 3/ 9/77

POSITION 49-34.0N, 144-37.0W

GMT 11.6

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA S	SCT. EN	SOUND
0	12.64	32.65	0	24.67	326.3	.00	.00	1497.
5	12.63	32.62	5	24.64	330.7	.17	.00	1497.
10	12.63	32.66	10	24.63	331.8	.33	.00	1497.
15	12.62	32.62	15	24.66	328.9	.50	.04	1497.
20	12.60	32.61	20	24.66	329.3	.66	.07	1496.
25	12.40	32.59	25	24.66	329.1	.83	.11	1496.
30	8.93	32.70	30	25.36	263.2	.98	.16	1484.
35	7.39	32.62	35	25.67	233.3	1.10	.19	1475.
40	6.52	32.61	40	25.76	223.0	1.22	.26	1475.
45	6.25	32.64	45	25.84	217.5	1.32	.26	1474.
50	5.86	32.67	50	25.92	210.1	1.42	.33	1473.
55	5.55	32.92	55	25.99	202.9	1.54	.39	1471.
60	5.48	32.91	60	25.99	203.1	1.64	.46	1471.
65	5.59	32.93	65	26.01	201.0	1.74	.51	1471.
70	5.50	32.94	70	26.04	198.7	1.84	.56	1471.
75	5.17	32.95	75	26.06	196.9	1.94	.61	1470.
80	5.10	32.96	80	26.08	195.1	2.03	.73	1470.
90	4.94	32.95	90	26.09	194.2	2.23	.90	1470.
100	4.78	33.03	99	26.16	187.4	2.42	1.00	1469.
110	4.76	33.22	109	26.32	172.5	2.60	1.26	1469.
120	5.01	33.56	119	26.56	149.7	2.76	1.47	1471.
130	5.09	33.70	129	26.66	140.3	2.91	1.65	1472.
140	5.03	33.76	139	26.75	133.6	3.05	1.84	1472.
150	4.88	33.79	149	26.75	131.6	3.19	2.03	1471.
160	4.64	33.81	159	26.80	127.5	3.31	2.24	1471.
170	4.52	33.83	169	26.83	124.8	3.43	2.45	1470.
180	4.45	33.86	179	26.85	122.3	3.55	2.67	1470.
190	4.57	33.85	189	26.86	121.8	3.69	2.90	1470.
200	4.28	33.84	199	26.86	122.1	3.80	3.14	1470.
210	4.19	33.88	209	26.90	117.9	3.92	3.33	1470.
220	4.11	33.80	213	26.89	118.9	4.04	3.60	1469.
230	4.03	33.57	226	26.90	117.7	4.16	3.82	1469.
240	3.98	33.60	238	26.92	116.0	4.27	4.20	1469.
250	3.99	33.90	246	26.94	114.8	4.39	4.49	1469.
260	3.99	33.92	256	26.95	113.7	4.50	4.79	1470.
270	3.97	33.94	266	26.97	111.9	4.62	5.10	1470.
280	3.88	33.91	276	26.95	113.4	4.73	5.41	1469.
290	3.89	33.91	286	26.96	113.0	4.84	5.74	1470.
300	3.65	33.95	296	26.99	110.1	4.95	6.07	1470.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 17- 6-152

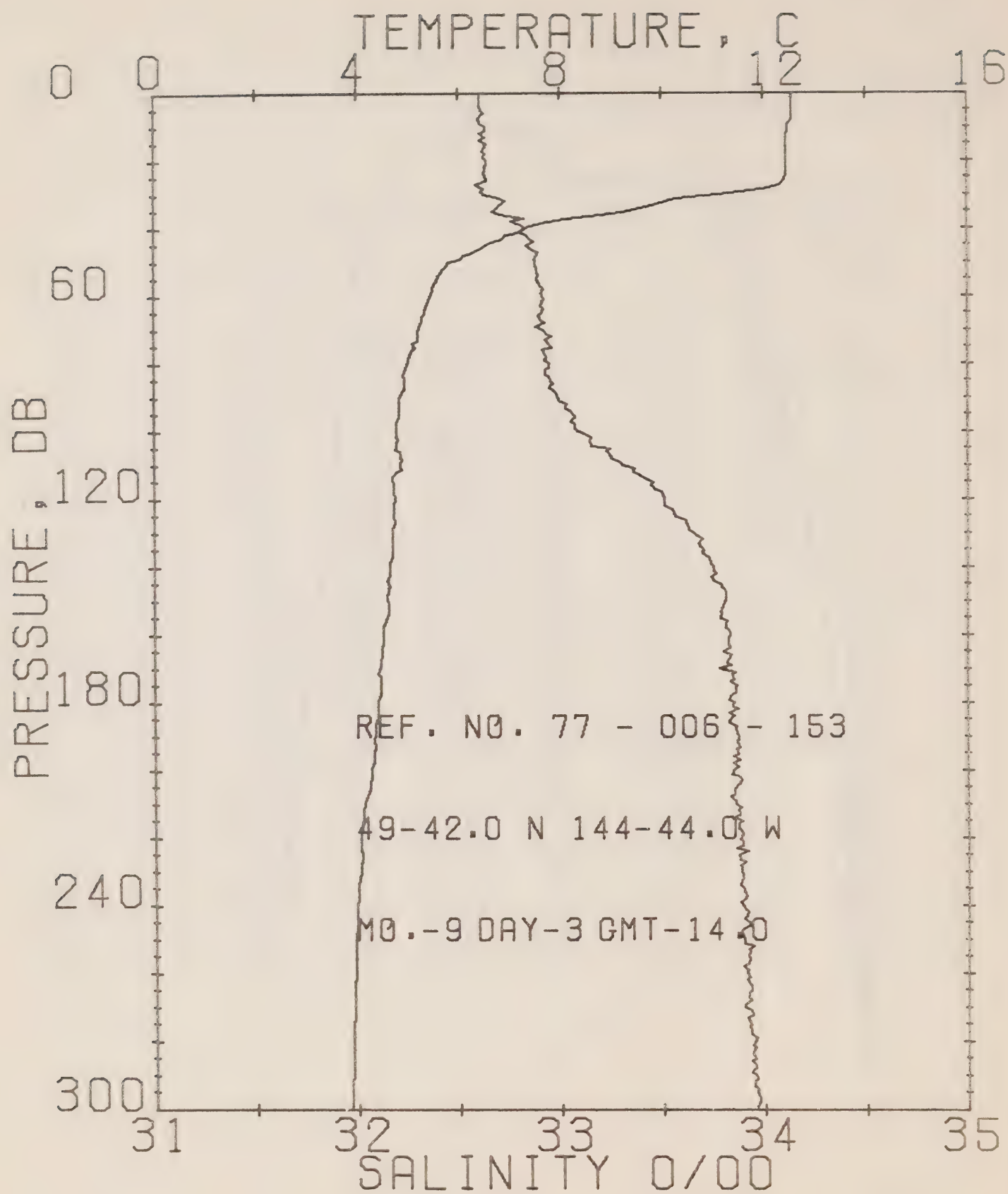
DATE 3/ 9/77

POSITION 49-34.0N, 144-37.0W

GMT 11.6

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.64	32.65	0	24.67	328.3	.00	.00	1497.
50	5.66	32.67	50	25.92	210.1	1.43	.33	1473.
100	4.73	33.65	99	26.16	187.4	2.42	1.03	1469.
150	4.68	33.79	149	26.75	131.6	3.18	2.03	1471.
200	4.28	33.64	199	26.86	122.1	3.80	3.14	1470.
250	3.99	33.90	246	26.94	114.8	4.30	4.49	1469.
300	3.65	33.95	295	26.99	110.1	4.95	6.07	1470.
350	3.65	34.01	347	27.04	106.0	5.40	7.86	1471.
400	3.78	34.08	397	27.10	100.6	6.01	9.85	1471.
450	3.74	34.12	446	27.13	97.7	6.50	11.98	1472.
500	3.68	34.16	496	27.17	94.2	6.98	14.29	1473.
550	3.63	34.19	545	27.20	91.8	7.45	16.77	1473.
600	3.54	34.23	595	27.24	88.1	7.90	19.42	1474.
650	3.46	34.25	644	27.27	86.1	8.33	22.19	1474.
700	3.35	34.26	694	27.30	83.2	8.75	25.09	1475.
750	3.26	34.31	745	27.33	80.4	9.16	28.09	1475.
800	3.17	34.34	793	27.37	77.4	9.56	31.22	1476.
850	3.09	34.37	842	27.40	74.7	9.94	34.40	1476.
900	3.00	34.39	892	27.42	73.1	10.31	37.75	1477.
950	2.93	34.41	941	27.44	70.7	10.67	41.15	1477.
1000	2.86	34.43	990	27.46	69.2	11.02	44.65	1478.
1050	2.78	34.44	1040	27.48	67.5	11.37	48.24	1478.
1100	2.71	34.45	1089	27.49	66.3	11.70	51.93	1479.
1150	2.65	34.45	1138	27.50	66.2	12.03	55.66	1479.
1200	2.59	34.47	1186	27.53	63.6	12.35	59.49	1480.
1250	2.54	34.48	1237	27.54	62.9	12.66	63.41	1480.
1300	2.49	34.49	1286	27.54	62.1	12.97	67.42	1481.
1350	2.44	34.51	1336	27.56	60.5	13.27	71.56	1482.
1400	2.39	34.53	1385	27.59	58.2	13.57	75.66	1482.





## OFFSHORE OCEANOGRAPHY GROUP

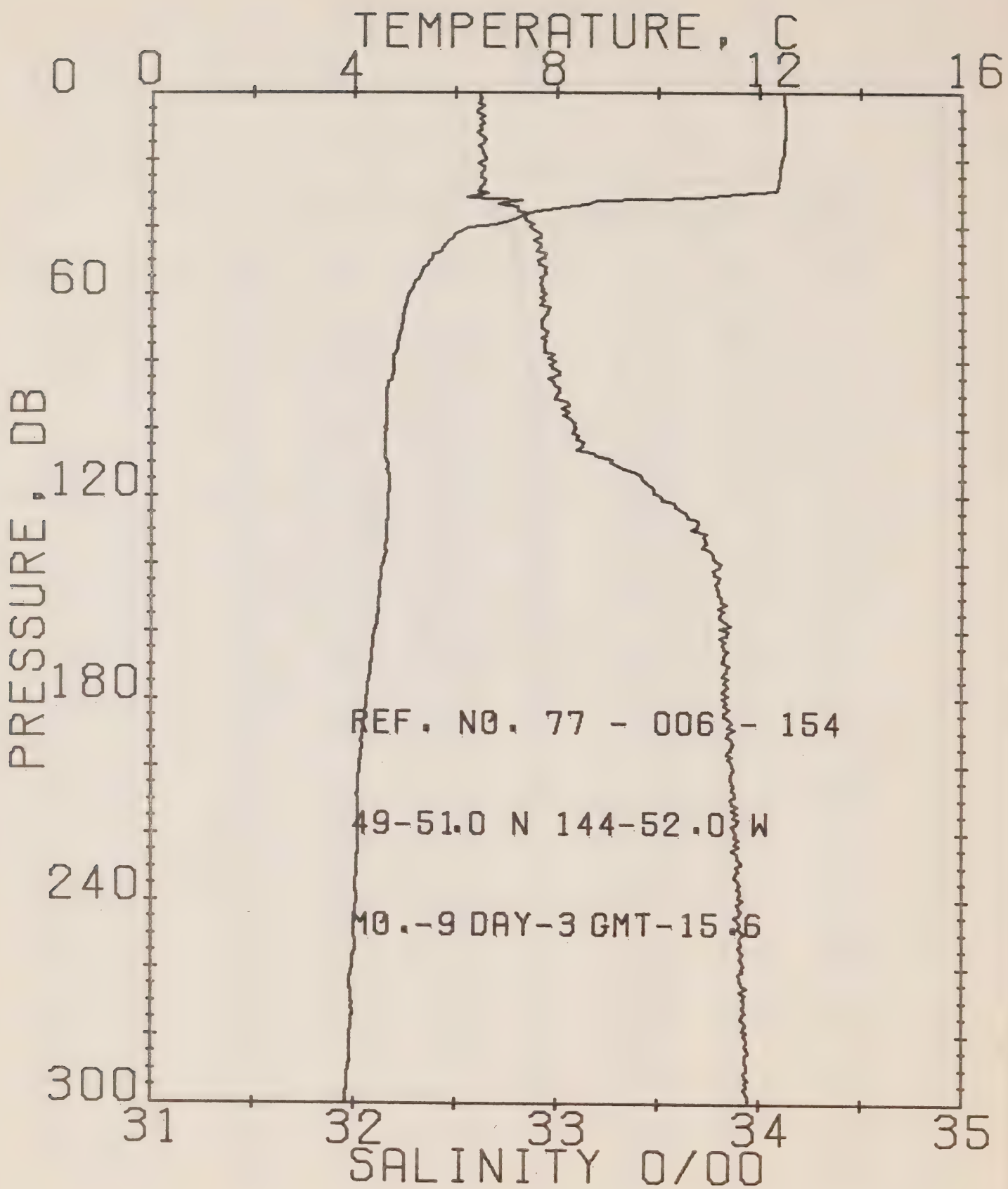
REFERENCE NO. 77- 6-155

DATE 3/ 9/77

POSITION 49-42.0N, 144-44.0W

GMT 14.0

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.55	32.61	0	24.65	330.0	.00	.00	1495.
5	12.56	32.61	5	24.65	329.6	.16	.00	1496.
10	12.47	32.63	10	24.68	326.9	.33	.02	1496.
15	12.46	32.63	15	24.69	326.6	.49	.04	1496.
20	12.45	32.64	20	24.69	326.3	.66	.07	1496.
25	12.44	32.64	25	24.70	326.2	.82	.10	1496.
30	11.15	32.62	30	24.92	304.5	.98	.15	1492.
35	9.25	32.67	35	25.23	270.9	1.12	.20	1485.
40	7.30	32.63	40	25.69	231.5	1.24	.24	1478.
45	6.53	32.83	45	25.80	221.2	1.36	.29	1475.
50	5.64	32.88	50	25.92	209.6	1.46	.34	1472.
55	5.58	32.89	55	25.96	206.1	1.57	.40	1471.
60	5.45	32.91	60	26.00	202.6	1.67	.46	1471.
65	5.33	32.91	65	26.01	201.6	1.77	.52	1471.
70	5.21	32.91	70	26.02	200.3	1.87	.59	1470.
75	5.13	32.95	75	26.07	196.2	1.97	.67	1470.
80	4.98	32.94	80	26.07	195.3	2.07	.74	1469.
90	4.64	32.98	89	26.12	190.9	2.26	.91	1469.
100	4.78	33.09	99	26.21	182.8	2.45	1.09	1469.
110	4.66	33.30	109	26.37	167.5	2.62	1.26	1470.
120	4.74	33.31	119	26.55	150.7	2.79	1.46	1470.
130	4.69	33.65	129	26.67	139.5	2.97	1.65	1470.
140	4.65	33.75	139	26.75	131.8	3.06	1.83	1470.
150	4.60	33.61	149	26.80	126.9	3.17	2.02	1470.
160	4.51	33.33	159	26.85	124.5	3.32	2.25	1470.
170	4.44	33.78	169	26.80	127.6	3.44	2.44	1470.
180	4.41	33.85	179	26.85	122.3	3.57	2.65	1470.
190	4.33	33.87	189	26.88	120.1	3.69	2.86	1470.
200	4.27	33.86	199	26.87	120.5	3.81	3.16	1470.
210	4.15	33.86	209	26.89	119.1	3.93	3.37	1469.
220	4.06	33.86	216	26.92	116.5	4.04	3.65	1469.
230	4.05	33.89	226	26.92	116.4	4.16	3.90	1469.
240	3.98	33.89	236	26.95	115.1	4.28	4.17	1469.
250	3.96	33.90	246	26.94	114.7	4.39	4.42	1469.
260	3.93	33.91	256	26.95	113.4	4.50	4.75	1469.
270	3.92	33.90	266	26.94	114.5	4.62	5.06	1469.
280	3.90	33.95	276	26.99	110.2	4.73	5.37	1470.
290	3.88	33.95	286	26.99	110.2	4.84	5.69	1470.
300	3.86	33.97	296	27.00	109.1	4.95	6.02	1470.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77-8-154

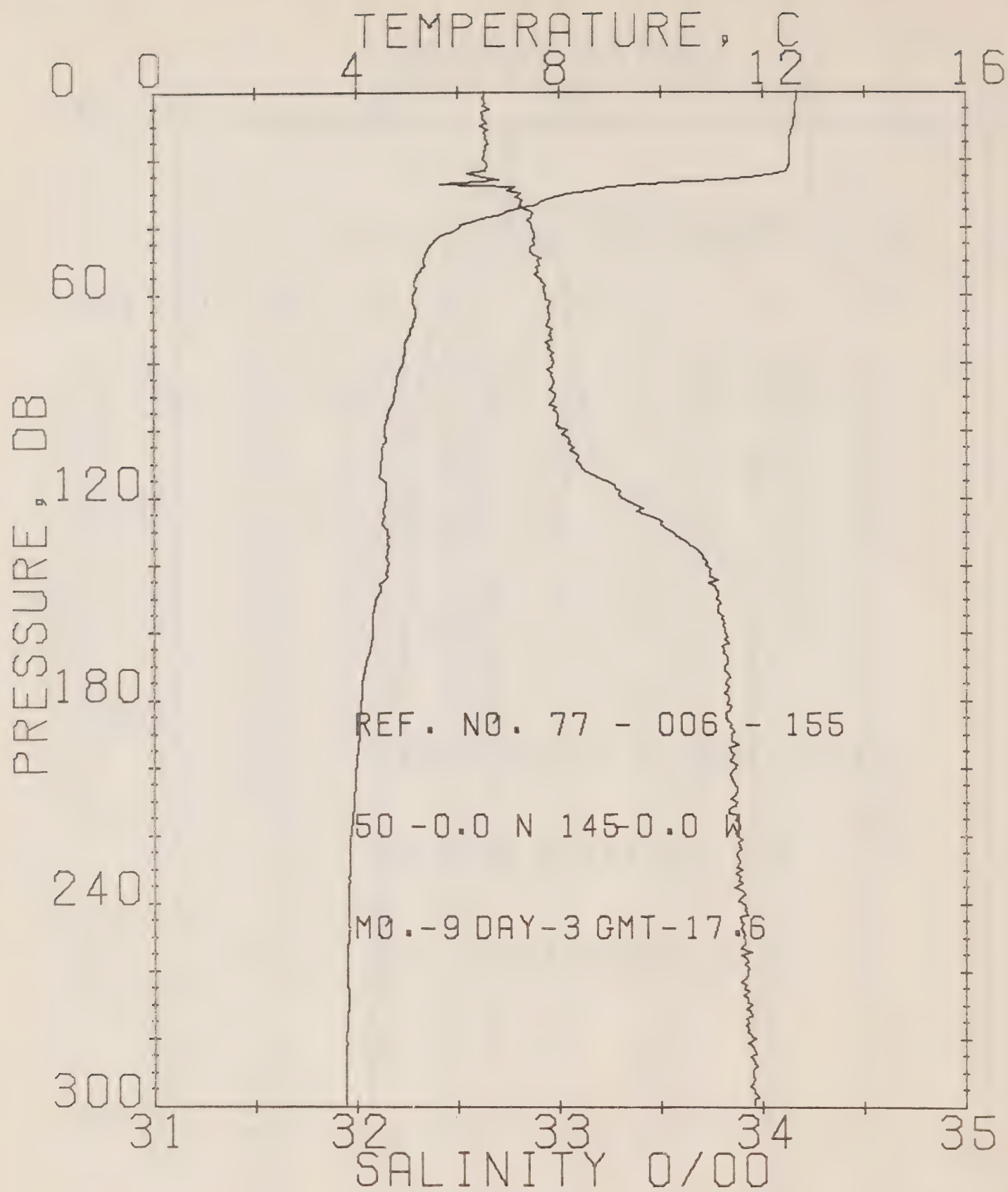
DATE 3/ 9/77

POSITION 49-51.0N, 144-52.0W

GMT 15.6

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.48	32.82	0	24.67	327.8	.00	.88	1495.
5	12.51	32.82	5	24.67	328.5	.16	.88	1496.
10	12.51	32.82	10	24.67	328.1	.33	.88	1496.
15	12.48	32.84	15	24.69	328.8	.49	.84	1496.
20	12.43	32.84	20	24.70	325.4	.66	.87	1496.
25	12.39	32.82	25	24.69	326.3	.82	.10	1496.
30	11.58	32.80	30	24.87	309.7	.98	.13	1494.
35	7.69	32.81	35	25.62	237.9	1.11	.19	1479.
40	6.32	32.87	40	25.85	216.1	1.23	.24	1474.
45	5.80	32.92	45	25.96	206.1	1.33	.28	1472.
50	5.50	32.91	50	25.99	203.2	1.43	.33	1471.
55	5.28	32.93	55	26.03	199.7	1.53	.39	1470.
60	5.08	32.94	60	26.06	196.4	1.63	.44	1470.
65	4.98	32.95	65	26.08	194.6	1.73	.51	1469.
70	4.93	32.93	70	26.06	196.2	1.83	.57	1469.
75	4.84	32.94	75	26.09	194.2	1.93	.63	1469.
80	4.78	32.99	80	26.13	190.0	2.02	.72	1469.
90	4.64	33.00	89	26.16	187.4	2.21	.86	1468.
100	4.63	33.09	99	26.23	180.9	2.40	1.08	1469.
110	4.66	33.27	109	26.36	168.1	2.57	1.25	1469.
120	4.67	33.31	119	26.56	149.9	2.73	1.44	1470.
130	4.63	33.37	129	26.69	137.6	2.87	1.62	1470.
140	4.56	33.31	139	26.81	126.3	3.00	1.80	1470.
150	4.49	33.31	149	26.81	126.1	3.13	1.99	1470.
160	4.39	33.34	159	26.85	122.6	3.25	2.15	1470.
170	4.33	33.34	169	26.86	121.9	3.38	2.35	1469.
180	4.25	33.32	179	26.84	123.0	3.50	2.61	1469.
190	4.16	33.36	189	26.86	119.4	3.62	2.83	1469.
200	4.10	33.36	199	26.90	116.3	3.74	3.07	1469.
210	4.08	33.36	208	26.90	116.4	3.86	3.32	1469.
220	4.08	33.36	218	26.91	116.7	3.97	3.57	1469.
230	4.06	33.39	228	26.92	116.2	4.09	3.84	1469.
240	4.04	33.92	238	26.94	114.0	4.21	4.12	1469.
250	4.00	33.93	248	26.95	113.1	4.32	4.40	1469.
260	3.96	33.91	258	26.95	113.6	4.44	4.70	1469.
270	3.96	33.93	268	26.96	112.8	4.55	5.01	1470.
280	3.92	33.93	278	26.96	112.5	4.66	5.32	1470.
290	3.88	33.94	288	26.98	111.1	4.77	5.63	1470.
300	3.84	33.95	298	27.00	109.2	4.88	5.94	1470.





## OFFSHORE OCEANOGRAPHY GROUP

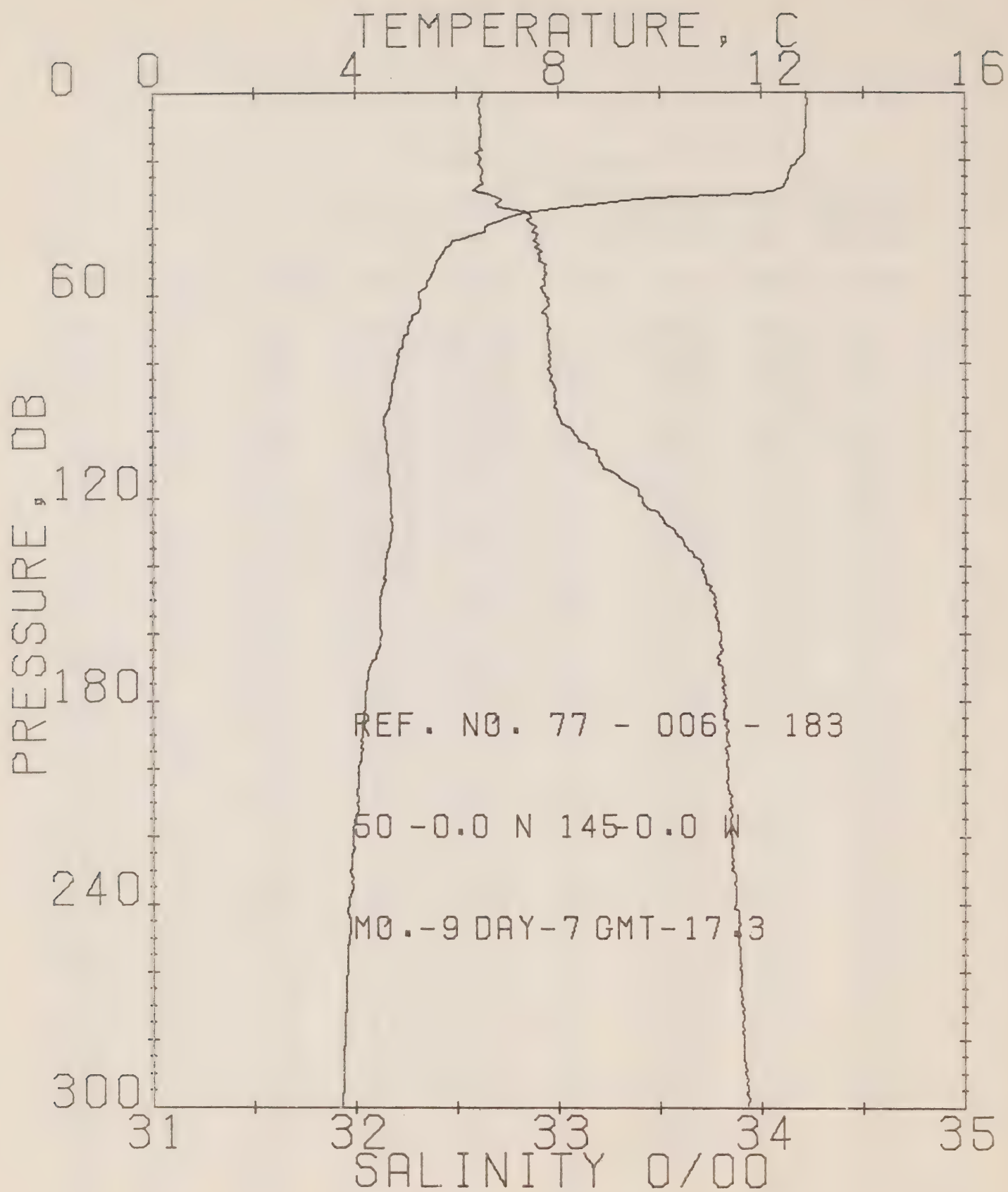
REFERENCE NO. 77- 6-155

DATE 3/ 9/77

POSITION 50- .0N, 145- .0W

GMT 17.6

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.66	32.65	0	24.65	330.0	.00	.00	1497.
5	12.63	32.66	5	24.67	327.7	.16	.00	1497.
10	12.62	32.62	10	24.65	330.6	.33	.02	1497.
15	12.54	32.65	15	24.69	326.8	.49	.04	1497.
20	12.53	32.63	20	24.67	328.6	.66	.07	1497.
25	11.79	32.62	25	24.80	315.8	.82	.10	1494.
30	8.19	32.80	30	25.55	245.3	.96	.14	1481.
35	7.00	32.86	35	25.76	225.3	1.08	.18	1477.
40	6.03	32.87	40	25.89	212.4	1.19	.22	1473.
45	5.47	32.88	45	25.97	205.1	1.29	.27	1471.
50	5.34	32.89	50	25.99	202.9	1.39	.32	1470.
55	5.17	32.91	55	26.02	200.1	1.49	.37	1470.
60	5.13	32.93	60	26.05	197.8	1.59	.43	1470.
65	5.17	32.95	65	26.05	197.0	1.69	.49	1470.
70	5.08	32.96	70	26.08	195.0	1.79	.56	1470.
75	4.96	32.95	75	26.08	194.3	1.89	.63	1469.
80	4.93	32.97	80	26.10	192.8	1.98	.71	1469.
90	4.75	32.98	89	26.13	190.1	2.18	.88	1469.
100	4.56	33.04	99	26.19	184.0	2.37	1.06	1468.
110	4.49	33.10	109	26.25	178.9	2.55	1.25	1468.
120	4.58	33.31	119	26.40	164.3	2.72	1.45	1469.
130	4.62	33.55	129	26.59	146.4	2.87	1.65	1470.
140	4.62	33.72	139	26.73	134.0	3.01	1.84	1470.
150	4.38	33.77	149	26.79	127.6	3.14	2.03	1469.
160	4.31	33.82	159	26.84	123.7	3.27	2.23	1469.
170	4.17	33.82	169	26.85	122.3	3.39	2.44	1469.
180	4.08	33.83	179	26.87	120.2	3.51	2.65	1469.
190	4.05	33.85	189	26.89	118.8	3.63	2.88	1469.
200	3.98	33.86	199	26.91	117.0	3.75	3.11	1469.
210	3.94	33.87	208	26.92	116.3	3.87	3.36	1469.
220	3.88	33.87	218	26.92	115.6	3.98	3.61	1468.
230	3.87	33.90	228	26.95	113.5	4.10	3.88	1469.
240	3.84	33.91	238	26.95	112.9	4.21	4.15	1469.
250	3.84	33.91	248	26.96	112.5	4.32	4.43	1469.
260	3.81	33.93	258	26.98	110.9	4.44	4.72	1469.
270	3.83	33.94	268	26.99	110.2	4.55	5.03	1469.
280	3.79	33.97	278	27.01	108.1	4.66	5.34	1469.
290	3.78	33.95	288	27.00	109.3	4.77	5.65	1469.
300	3.78	33.96	298	27.01	108.5	4.88	5.98	1469.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 17- 6-183

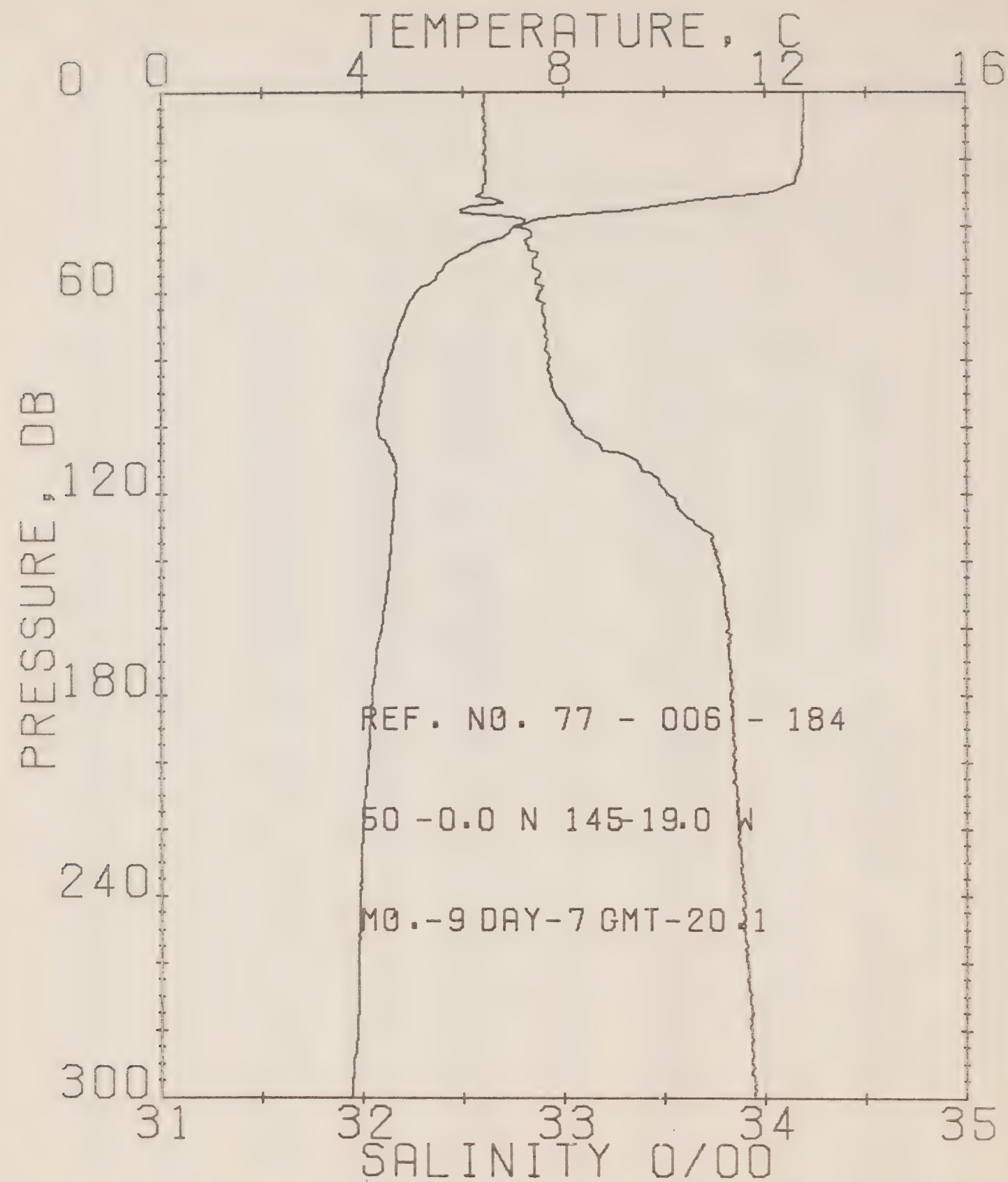
DATE 7/ 9/77

POSITION 50- 00N, 145- 00W

GMT 17.3

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.89	32.82	0	24.86	334.8	.00	.00	1496.
5	12.89	32.81	5	24.59	335.9	.17	.00	1498.
10	12.87	32.82	10	24.50	334.9	.34	.02	1498.
15	12.86	32.81	15	24.60	335.5	.50	.04	1498.
20	12.72	32.82	20	24.65	332.5	.67	.07	1497.
25	12.54	32.82	25	24.60	329.2	.84	.11	1497.
30	11.74	32.84	30	24.83	313.5	1.00	.15	1494.
35	7.57	32.82	35	25.05	235.7	1.13	.20	1479.
40	6.56	32.89	40	25.84	217.3	1.24	.24	1475.
45	5.88	32.90	45	25.94	208.0	1.35	.25	1473.
50	5.81	32.91	50	25.97	204.7	1.45	.34	1472.
55	5.47	32.93	55	26.00	201.7	1.56	.35	1471.
60	5.25	32.94	60	26.04	198.6	1.66	.45	1470.
65	5.22	32.92	65	26.03	199.4	1.75	.51	1470.
70	5.04	32.96	70	26.08	195.0	1.85	.56	1470.
75	4.94	32.95	75	26.09	194.2	1.95	.65	1469.
80	4.81	32.95	80	26.10	192.9	2.05	.75	1469.
90	4.70	32.96	89	26.10	189.9	2.24	.85	1468.
100	4.60	33.06	99	26.21	182.5	2.47	1.07	1468.
110	4.64	33.21	109	26.32	172.1	2.60	1.20	1469.
120	4.69	33.41	119	26.47	157.6	2.77	1.45	1470.
130	4.71	33.58	129	26.60	145.5	2.92	1.65	1470.
140	4.59	33.71	139	26.72	134.2	3.06	1.84	1470.
150	4.49	33.77	149	26.78	128.9	3.19	2.04	1470.
160	4.49	33.80	159	26.80	127.0	3.32	2.24	1470.
170	4.26	33.80	169	26.85	124.3	3.44	2.45	1469.
180	4.18	33.82	179	26.85	122.4	3.57	2.67	1469.
190	4.12	33.83	189	26.87	121.0	3.69	2.90	1469.
200	4.07	33.83	199	26.87	120.4	3.81	3.14	1469.
210	4.04	33.84	209	26.89	119.1	3.93	3.35	1469.
220	3.95	33.85	218	26.90	117.8	4.05	3.65	1469.
230	3.90	33.85	228	26.91	117.3	4.17	3.92	1469.
240	3.88	33.87	238	26.92	115.7	4.28	4.20	1469.
250	3.88	33.89	248	26.94	114.0	4.40	4.48	1469.
260	3.85	33.90	258	26.95	113.3	4.51	4.78	1469.
270	3.80	33.91	268	26.98	112.6	4.62	5.09	1469.
280	3.78	33.91	278	26.97	111.8	4.74	5.40	1469.
290	3.70	33.92	288	26.98	111.1	4.85	5.72	1469.
300	3.73	33.94	298	26.99	109.8	4.96	6.08	1469.





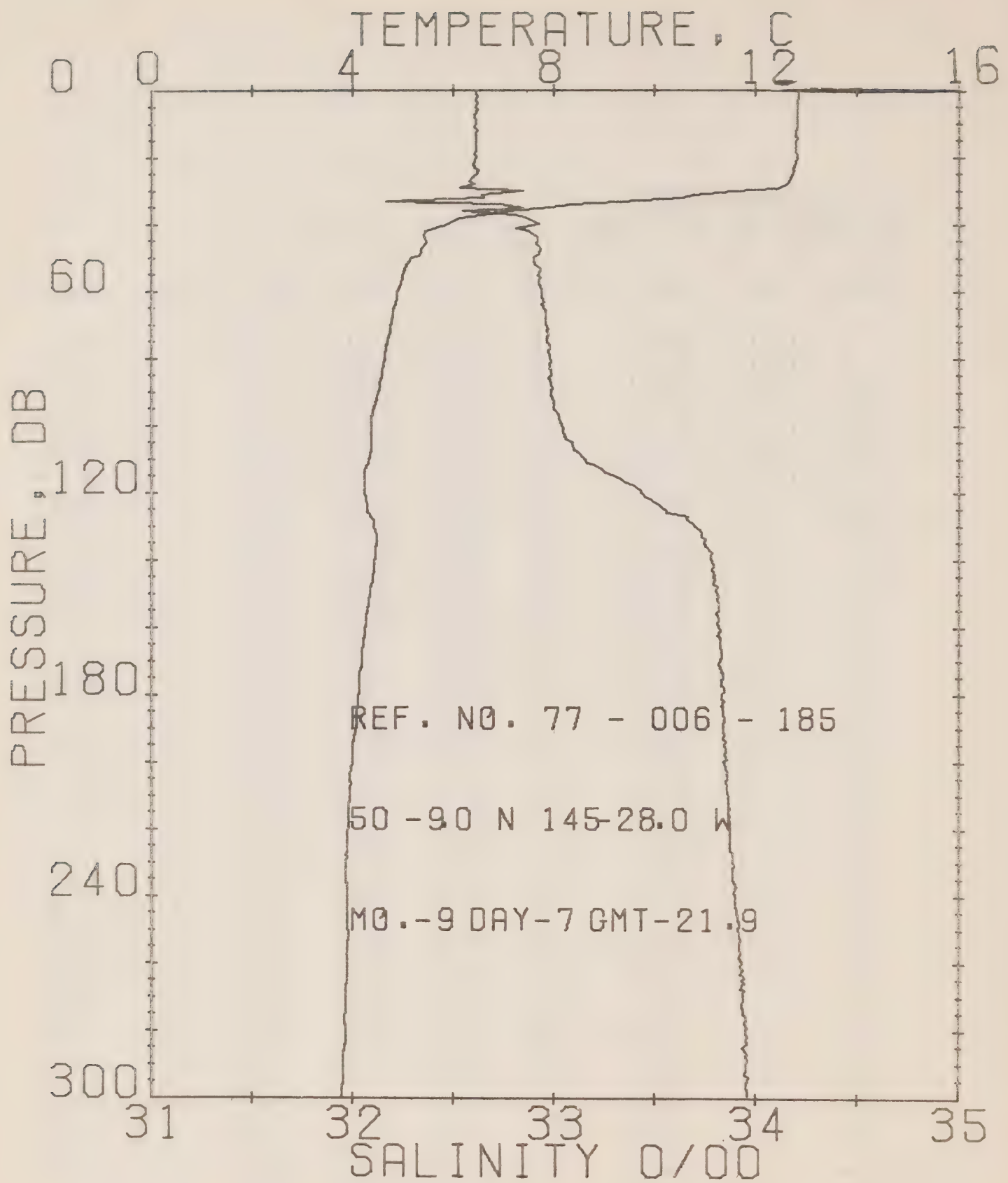
## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 17- 6-184

DATE 7/ 9/77

POSITION 50- 00N, 145-18.5W GMT 20.2

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA S	POT. EN	SOUND
0	12.77	32.80	0	24.61	334.1	.00	.00	1497.
5	12.76	32.81	5	24.61	334.0	.17	.00	1497.
10	12.75	32.81	10	24.62	333.6	.33	.02	1497.
15	12.76	32.81	15	24.61	334.1	.50	.04	1497.
20	12.74	32.81	20	24.62	333.5	.67	.07	1497.
25	12.62	32.81	25	24.64	331.4	.83	.11	1497.
30	12.06	32.80	30	24.74	322.0	1.00	.15	1495.
35	9.58	32.49	35	25.12	285.8	1.15	.20	1485.
40	7.04	32.76	40	25.67	233.4	1.27	.25	1477.
45	6.55	32.81	45	25.81	220.6	1.38	.30	1474.
50	5.76	32.85	50	25.91	211.1	1.40	.35	1472.
55	5.46	32.88	55	25.97	205.1	1.60	.41	1471.
60	5.05	32.88	60	26.02	200.5	1.70	.45	1469.
65	4.67	32.89	65	26.05	197.9	1.80	.50	1469.
70	4.71	32.90	70	26.07	195.7	1.80	.50	1468.
75	4.61	32.91	75	26.09	193.7	1.90	.57	1468.
80	4.51	32.93	80	26.11	191.6	2.00	.74	1465.
90	4.57	32.96	89	26.15	188.2	2.28	.91	1467.
100	4.29	33.05	99	26.25	180.5	2.46	1.09	1467.
110	4.55	33.50	109	26.44	161.0	2.64	1.27	1469.
120	4.65	33.51	119	26.56	149.7	2.70	1.45	1470.
130	4.58	33.58	129	26.70	136.7	2.93	1.64	1470.
140	4.53	33.76	139	26.77	129.7	3.07	1.82	1470.
150	4.46	33.80	149	26.80	126.7	3.10	2.01	1470.
160	4.57	33.82	159	26.83	123.9	3.32	2.20	1469.
170	4.26	33.82	169	26.85	122.6	3.44	2.41	1469.
180	4.19	33.83	179	26.86	121.5	3.56	2.60	1469.
190	4.13	33.84	189	26.87	120.2	3.60	2.80	1469.
200	4.11	33.85	199	26.88	119.5	3.81	3.10	1469.
210	4.05	33.86	208	26.90	118.2	3.92	3.34	1469.
220	4.00	33.87	216	26.91	116.6	4.04	3.60	1469.
230	3.98	33.88	226	26.92	116.2	4.16	3.87	1469.
240	3.95	33.89	236	26.93	115.1	4.27	4.14	1469.
250	3.93	33.89	246	26.94	114.7	4.39	4.45	1469.
260	3.92	33.91	256	26.95	113.3	4.50	4.75	1469.
270	3.91	33.93	266	26.96	112.3	4.61	5.05	1469.
280	3.89	33.93	276	26.97	111.5	4.73	5.35	1470.
290	3.83	33.93	286	26.98	111.1	4.84	5.67	1469.
300	3.80	33.96	296	27.00	109.0	4.95	6.00	1469.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6-185

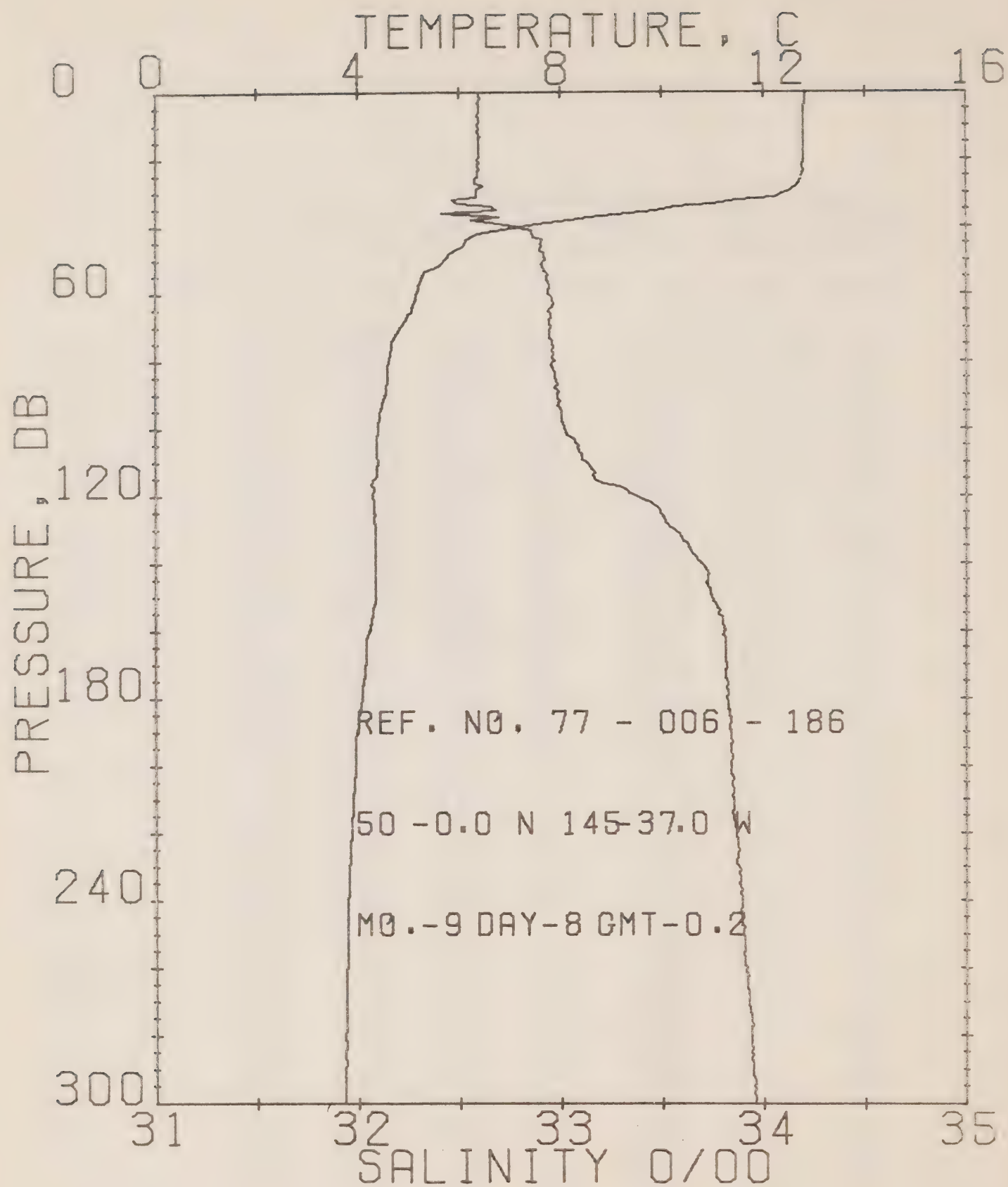
DATE 7/ 9/77

POSITION 30- 6.6N, 145-28.0W

GMT 21.9

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.85	32.81	0	24.60	335.2	.00	.00	1497.
5	12.83	32.81	5	24.60	334.6	.17	.00	1497.
10	12.82	32.82	10	24.61	334.3	.33	.02	1497.
15	12.81	32.82	15	24.61	334.2	.50	.04	1497.
20	12.82	32.81	20	24.60	335.1	.67	.07	1498.
25	12.72	32.81	25	24.62	332.9	.84	.11	1497.
30	11.80	32.83	30	25.00	297.0	1.00	.15	1494.
35	7.74	32.83	35	25.63	236.8	1.14	.20	1488.
40	5.89	32.92	40	25.95	206.6	1.26	.24	1473.
45	5.47	32.92	45	26.00	202.3	1.36	.29	1471.
50	5.19	32.90	50	26.02	200.5	1.46	.34	1470.
55	4.99	32.92	55	26.05	197.1	1.56	.39	1469.
60	4.88	32.94	60	26.08	194.4	1.66	.45	1469.
65	4.81	32.95	65	26.10	192.7	1.75	.51	1469.
70	4.75	32.96	70	26.11	191.4	1.85	.57	1468.
75	4.68	32.96	75	26.12	190.6	1.94	.64	1468.
80	4.63	32.98	80	26.14	189.1	2.04	.72	1468.
90	4.51	32.99	89	26.16	187.5	2.23	.88	1468.
100	4.38	33.04	99	26.21	182.3	2.41	1.00	1467.
110	4.33	33.15	109	26.31	173.0	2.59	1.25	1468.
120	4.25	33.43	119	26.54	151.3	2.75	1.44	1468.
130	4.44	33.70	129	26.75	133.2	2.89	1.62	1469.
140	4.43	33.78	139	26.80	127.3	3.02	1.80	1469.
150	4.34	33.81	149	26.83	124.3	3.15	1.99	1469.
160	4.24	33.82	159	26.85	122.5	3.27	2.18	1469.
170	4.18	33.83	169	26.86	121.5	3.40	2.39	1469.
180	4.12	33.83	179	26.87	120.5	3.52	2.60	1469.
190	4.06	33.84	189	26.88	119.4	3.64	2.83	1469.
200	3.99	33.84	199	26.89	118.7	3.75	3.06	1469.
210	3.95	33.86	208	26.91	116.9	3.87	3.31	1469.
220	3.91	33.87	218	26.92	115.8	3.99	3.58	1469.
230	3.88	33.89	228	26.94	114.4	4.10	3.85	1469.
240	3.90	33.90	238	26.94	113.8	4.22	4.16	1469.
250	3.91	33.91	248	26.95	113.1	4.33	4.50	1469.
260	3.89	33.93	258	26.97	111.6	4.44	4.88	1469.
270	3.86	33.94	268	26.98	110.6	4.55	4.95	1469.
280	3.86	33.95	278	26.99	109.7	4.66	5.29	1469.
290	3.81	33.96	288	27.00	109.1	4.77	5.60	1469.
300	3.78	33.97	298	27.01	108.1	4.88	5.95	1469.





## OFFSHORE OCEANOGRAPHY GROUP

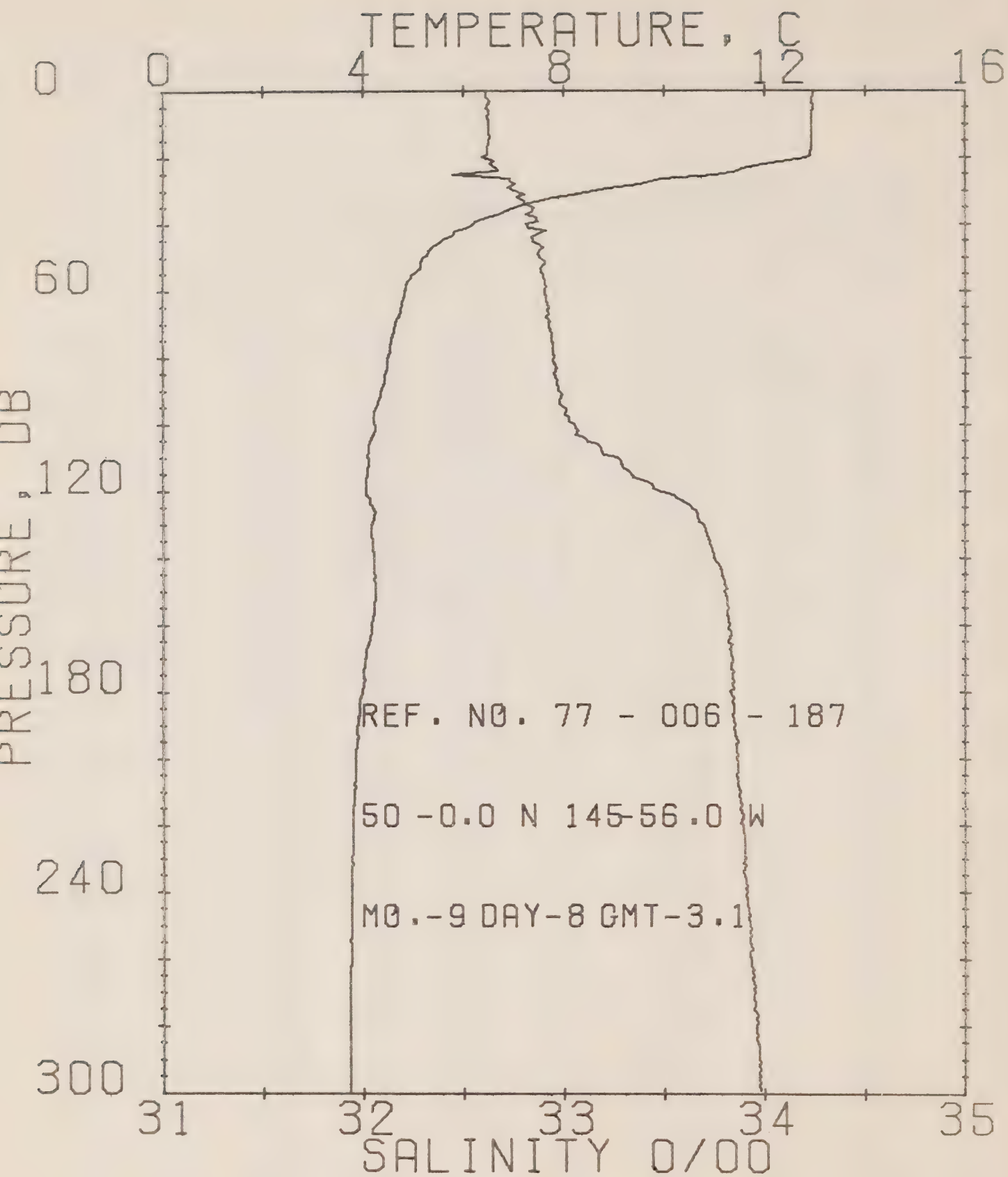
REFERENCE NO. 77- 6-186

DATE 8/ 9/77

POSITION 50- 00N, 145-37.00W

GMT .3

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA S	POT. EN	COORD
0	12.82	32.80	0	24.80	335.1	.00	.00	1497.
5	12.80	32.80	5	24.59	335.4	.17	.00	1497.
10	12.81	32.80	10	24.59	335.6	.34	.02	1497.
15	12.80	32.80	15	24.80	335.5	.50	.04	1497.
20	12.80	32.80	20	24.59	335.8	.67	.07	1498.
25	12.76	32.59	25	24.60	335.2	.84	.11	1497.
30	12.57	32.58	30	24.67	329.1	1.00	.15	1498.
35	9.94	32.88	35	25.18	280.5	1.16	.21	1488.
40	7.27	32.76	40	25.64	236.1	1.20	.26	1475.
45	6.12	32.90	45	25.91	211.0	1.40	.30	1474.
50	5.89	32.95	50	25.98	204.2	1.51	.35	1472.
55	5.27	32.93	55	26.03	198.9	1.61	.41	1470.
60	5.16	32.94	60	26.05	197.2	1.71	.46	1470.
65	5.06	32.94	65	26.07	196.0	1.80	.50	1470.
70	4.84	32.95	70	26.10	193.1	1.90	.59	1469.
75	4.67	32.96	75	26.12	191.1	2.00	.66	1468.
80	4.60	32.97	80	26.14	189.1	2.09	.75	1468.
90	4.54	32.99	89	26.18	187.4	2.29	.90	1468.
100	4.40	33.02	99	26.20	183.6	2.47	1.02	1467.
110	4.39	33.15	109	26.28	175.8	2.65	1.20	1465.
120	4.31	33.37	119	26.43	156.7	2.81	1.47	1468.
130	4.34	33.58	129	26.63	142.8	2.96	1.68	1468.
140	4.36	33.69	139	26.73	133.2	3.10	1.88	1469.
150	4.34	33.75	149	26.78	129.0	3.23	2.04	1469.
160	4.22	33.81	159	26.84	123.1	3.36	2.24	1469.
170	4.14	33.82	169	26.86	121.9	3.49	2.40	1469.
180	4.07	33.82	179	26.87	120.9	3.60	2.60	1469.
190	3.97	33.84	189	26.89	118.8	3.72	2.85	1468.
200	3.95	33.84	199	26.39	118.5	3.84	3.15	1468.
210	3.89	33.88	209	26.91	116.9	3.96	3.37	1468.
220	3.88	33.87	218	26.92	115.6	4.07	3.58	1469.
230	3.82	33.88	228	26.94	114.4	4.19	3.85	1468.
240	3.80	33.89	238	26.95	113.3	4.30	4.10	1468.
250	3.78	33.90	248	26.95	112.9	4.41	4.42	1469.
260	3.77	33.92	258	26.97	111.4	4.53	4.74	1469.
270	3.76	33.95	268	26.98	110.7	4.64	5.04	1469.
280	3.75	33.94	278	26.99	109.4	4.75	5.35	1469.
290	3.75	33.95	288	27.00	109.2	4.86	5.67	1469.
300	3.73	33.98	298	27.01	108.2	4.97	5.98	1469.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8-187

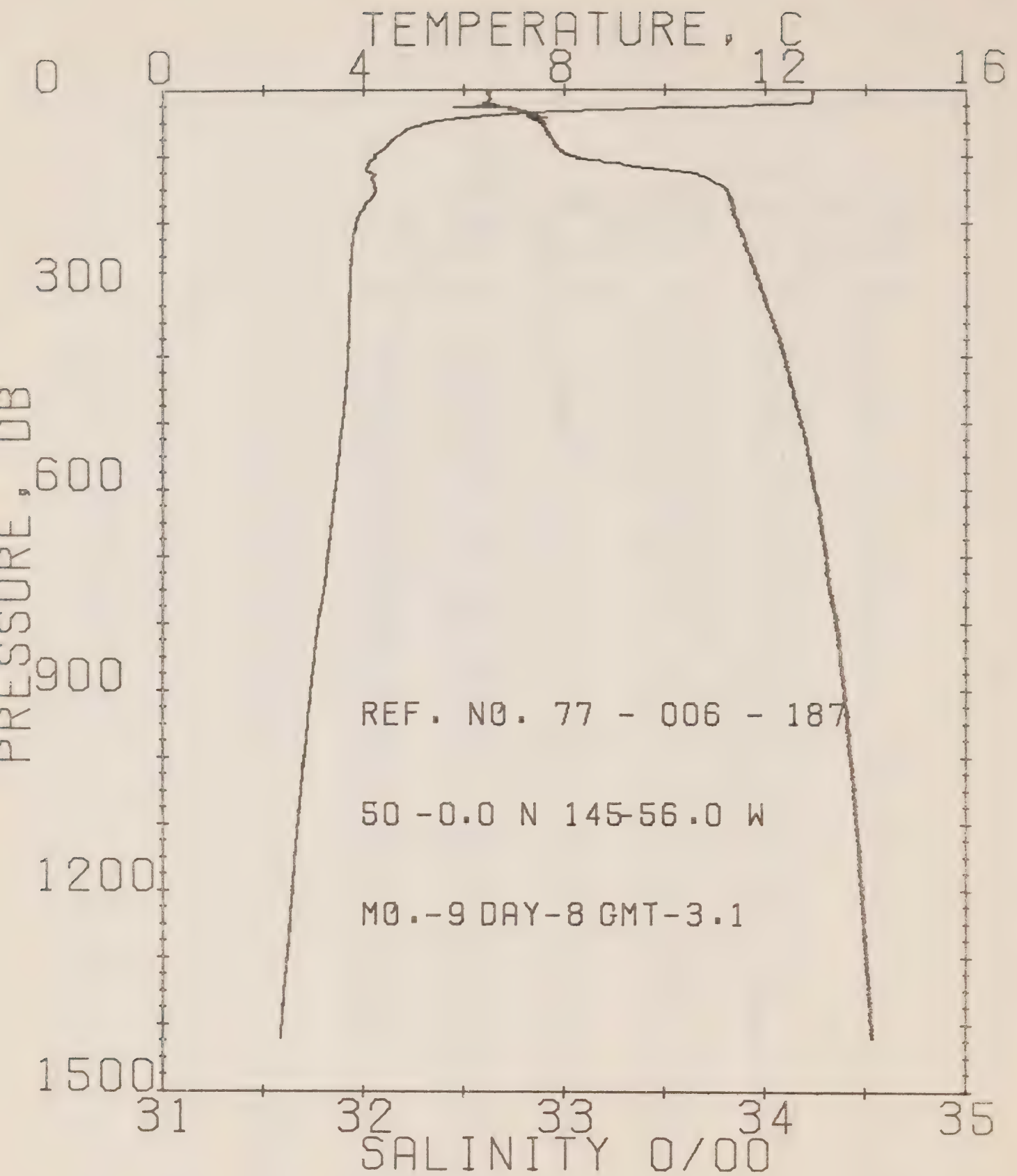
DATE 8/ 9/77

POSITION 50- 00N, 145-55.8W

GMT 3.1

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.95	32.81	0	24.58	336.7	.00	.00	1498.
5	12.96	32.82	5	24.58	336.8	.17	.00	1493.
10	12.93	32.82	10	24.59	335.9	.34	.02	1498.
15	12.93	32.83	15	24.59	335.7	.50	.04	1490.
20	12.82	32.89	20	24.59	336.3	.67	.07	1490.
25	11.83	32.45	25	24.81	315.0	.83	.10	1491.
30	8.81	32.75	30	25.44	255.1	.97	.14	1483.
35	7.81	32.85	35	25.75	226.0	1.09	.17	1477.
40	6.19	32.82	40	25.85	218.1	1.20	.22	1474.
45	5.55	32.85	45	25.93	208.4	1.30	.27	1471.
50	5.20	32.88	50	26.00	202.4	1.41	.32	1470.
55	4.98	32.90	55	26.04	198.6	1.51	.37	1469.
60	4.84	32.91	60	26.06	196.2	1.60	.40	1469.
65	4.75	32.93	65	26.09	194.0	1.70	.45	1468.
70	4.63	32.93	70	26.10	192.7	1.80	.50	1468.
75	4.57	32.94	75	26.11	191.4	1.89	.55	1468.
80	4.49	32.95	80	26.15	189.6	1.99	.71	1467.
90	4.35	32.97	89	26.16	186.7	2.18	.87	1467.
100	4.23	33.05	99	26.24	179.6	2.36	1.05	1467.
110	4.10	33.26	109	26.42	162.9	2.53	1.20	1467.
120	4.05	33.48	119	26.60	145.9	2.69	1.41	1467.
130	4.17	33.69	129	26.75	131.2	2.87	1.55	1466.
140	4.21	33.74	139	26.79	127.8	2.96	1.77	1466.
150	4.24	33.80	149	26.85	123.9	3.09	1.95	1469.
160	4.18	33.82	159	26.86	121.5	3.20	2.14	1469.
170	4.03	33.84	169	26.88	119.3	3.32	2.35	1468.
180	3.96	33.85	179	26.88	119.5	3.44	2.55	1468.
190	3.87	33.86	189	26.91	116.6	3.56	2.75	1468.
200	3.85	33.88	199	26.92	115.9	3.69	3.01	1468.
210	3.82	33.88	208	26.95	114.5	3.79	3.25	1468.
220	3.79	33.89	216	26.95	113.3	3.91	3.50	1468.
230	3.77	33.90	226	26.96	112.2	4.02	3.76	1468.
240	3.76	33.91	236	26.97	111.6	4.13	4.00	1468.
250	3.75	33.93	246	26.98	110.3	4.24	4.31	1468.
260	3.75	33.95	256	26.99	110.1	4.35	4.55	1469.
270	3.74	33.95	268	27.00	108.6	4.46	4.89	1469.
280	3.73	33.96	276	27.01	107.8	4.57	5.12	1469.
290	3.73	33.97	286	27.02	107.1	4.68	5.31	1469.
300	3.72	33.98	296	27.03	106.7	4.78	5.55	1469.





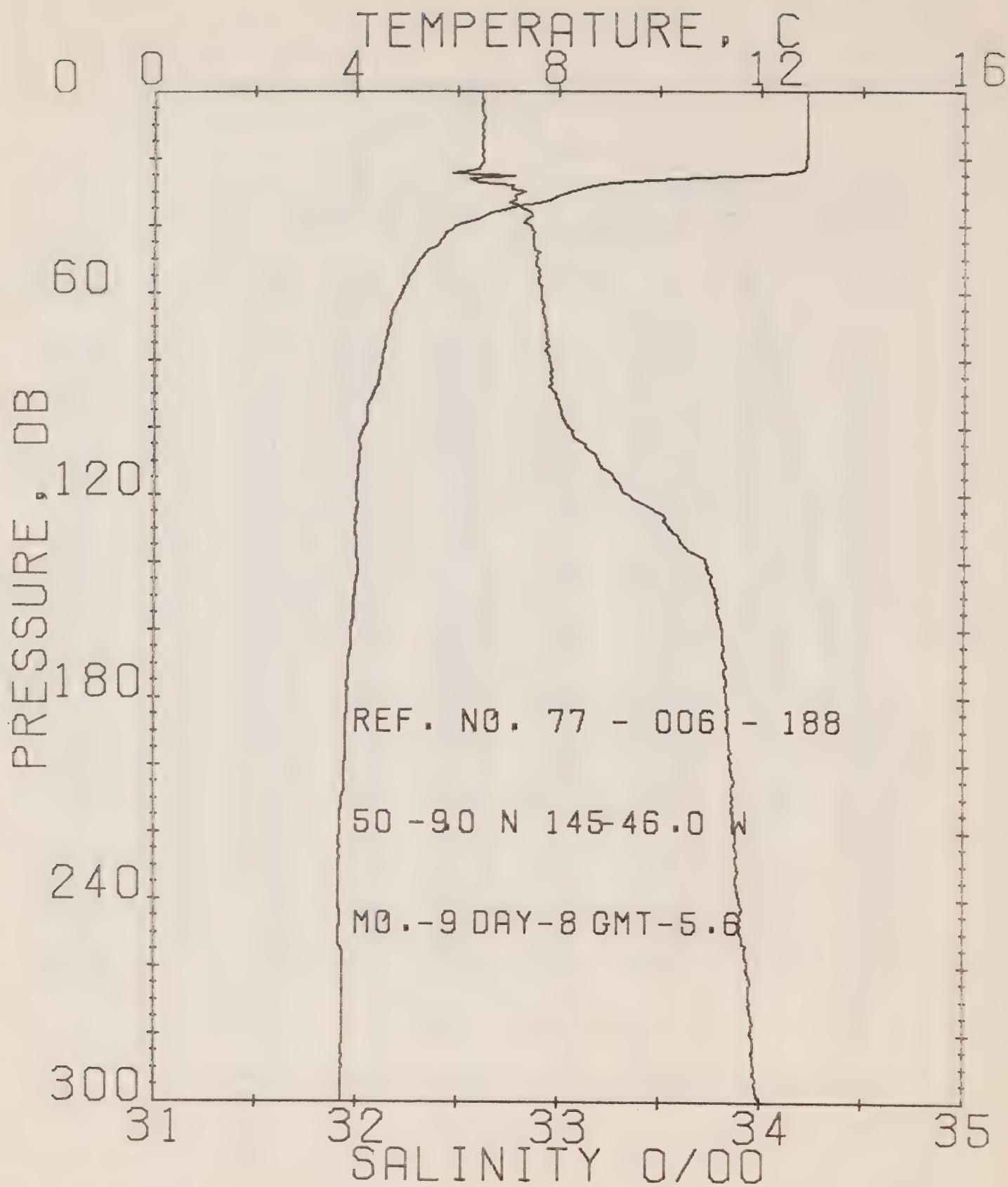
## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6-187

DATE 8/ 9/77

POSITION 50- 00N, 145-55.8W 6M 3.1

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.95	32.61	0	24.56	336.7	.00	.00	1498.
50	5.20	32.66	50	26.00	202.4	1.41	.32	1470.
100	4.23	33.05	99	26.24	179.6	2.36	1.05	1467.
150	4.24	33.80	149	26.33	123.9	3.08	1.95	1469.
200	3.65	33.86	199	26.92	115.9	3.68	3.01	1468.
250	3.75	33.93	246	26.96	110.3	4.24	4.31	1466.
300	3.72	33.96	298	27.03	106.7	4.78	5.65	1469.
350	3.70	34.04	347	27.08	102.2	5.31	7.55	1470.
400	3.68	34.10	397	27.12	98.2	5.81	9.46	1471.
450	3.63	34.14	446	27.16	94.7	6.29	11.55	1472.
500	3.57	34.18	496	27.20	91.5	6.75	13.81	1472.
550	3.49	34.23	545	27.25	87.5	7.20	16.21	1473.
600	3.43	34.25	595	27.27	85.7	7.64	18.76	1473.
650	3.35	34.27	644	27.29	83.5	8.06	21.44	1474.
700	3.28	34.30	694	27.33	80.7	8.47	24.25	1474.
750	3.21	34.32	743	27.35	78.9	8.87	27.20	1475.
800	3.08	34.36	793	27.39	75.4	9.25	30.24	1475.
850	3.01	34.38	842	27.41	73.3	9.62	33.37	1476.
900	2.93	34.40	891	27.44	71.1	9.99	36.66	1476.
950	2.68	34.41	941	27.45	70.1	10.34	39.95	1477.
1000	2.60	34.43	990	27.47	68.1	10.69	43.36	1477.
1050	2.74	34.44	1040	27.49	66.9	11.02	46.90	1476.
1100	2.66	34.46	1089	27.51	65.2	11.35	50.52	1479.
1150	2.62	34.47	1138	27.52	64.0	11.68	54.22	1479.
1200	2.58	34.48	1186	27.53	63.1	11.99	58.02	1480.
1250	2.52	34.49	1237	27.55	61.8	12.31	61.91	1480.
1300	2.46	34.51	1286	27.56	60.4	12.61	65.86	1481.
1350	2.41	34.52	1336	27.58	59.3	12.91	69.92	1482.
1400	2.35	34.54	1385	27.60	57.4	13.20	74.05	1482.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 5-180

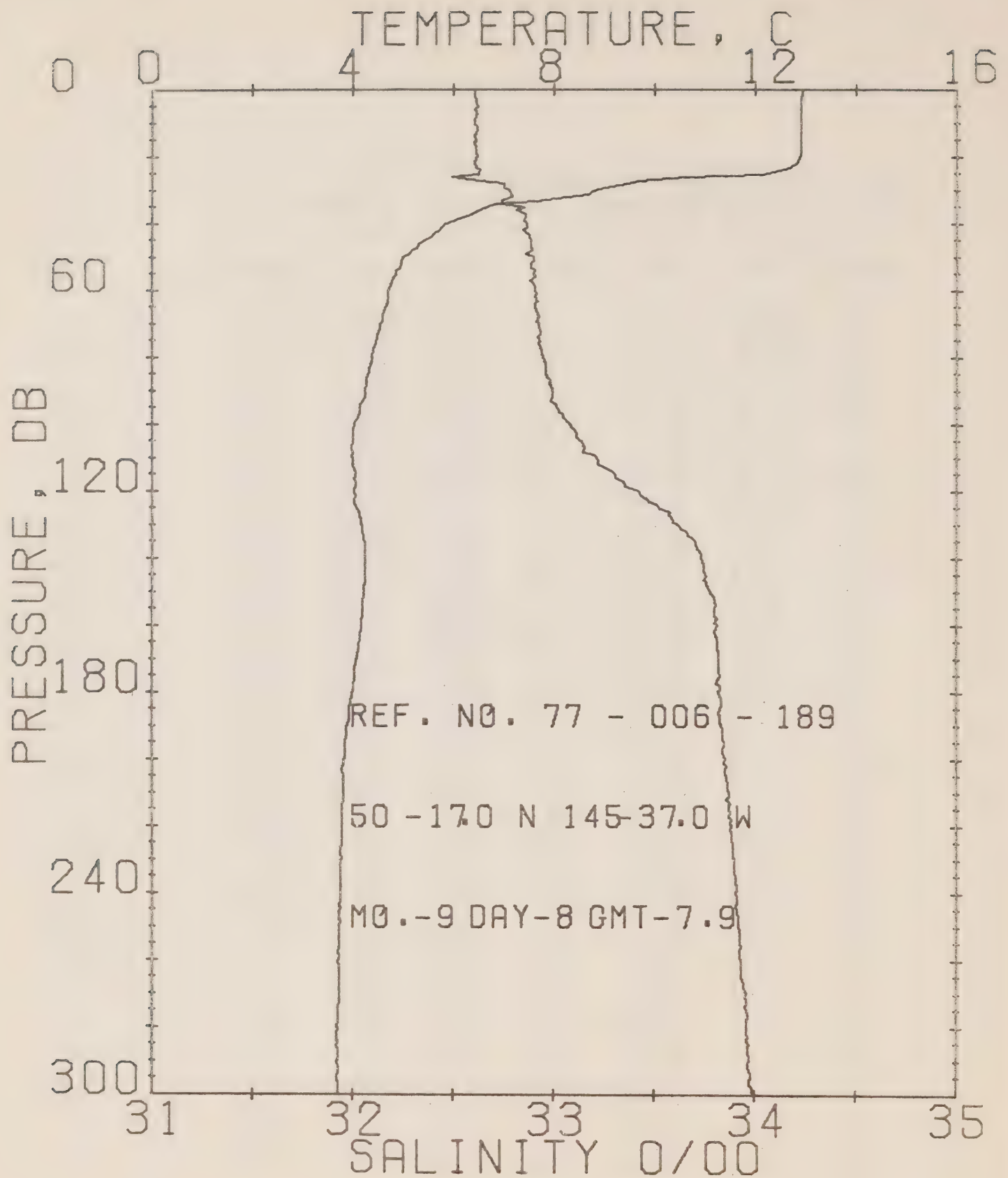
DATE 8/ 9/77

POSITION 30- 0.0N, 145-46.0W

GMT 5.6

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA S	POT. m	SOUND
0	12.91	32.62	0	24.59	335.6	.00	.00	1498.
5	12.91	32.62	5	24.59	335.7	.17	.00	1498.
10	12.91	32.62	10	24.59	335.6	.34	.00	1498.
15	12.91	32.62	15	24.59	335.8	.50	.00	1498.
20	12.90	32.63	20	24.60	335.3	.67	.00	1498.
25	11.38	32.77	25	25.00	297.5	.84	.11	1498.
30	8.20	32.63	30	25.57	243.2	.97	.14	1481.
35	6.92	32.62	35	25.74	226.6	1.09	.16	1476.
40	5.94	32.66	40	25.89	212.2	1.20	.20	1475.
45	5.63	32.67	45	25.94	207.5	1.31	.27	1472.
50	5.27	32.69	50	26.00	202.0	1.41	.32	1470.
55	5.03	32.91	55	26.04	198.5	1.51	.37	1469.
60	4.88	32.91	60	26.06	196.2	1.61	.43	1469.
65	4.70	32.92	65	26.09	194.0	1.70	.48	1468.
70	4.64	32.94	70	26.11	192.2	1.80	.50	1468.
75	4.57	32.94	75	26.12	191.3	1.90	.50	1468.
80	4.50	32.95	80	26.13	189.8	1.99	.71	1467.
90	4.31	32.98	89	26.16	185.5	2.18	.67	1467.
100	4.13	33.05	99	26.24	179.1	2.36	1.00	1466.
110	4.04	33.19	109	26.37	167.4	2.54	1.20	1466.
120	4.00	33.34	119	26.49	155.6	2.70	1.42	1467.
130	3.98	33.55	129	26.60	140.3	2.84	1.61	1467.
140	4.03	33.73	139	26.80	127.1	2.98	1.75	1468.
150	3.96	33.76	149	26.84	122.9	3.10	1.90	1467.
160	3.90	33.81	159	26.87	119.8	3.22	2.17	1467.
170	3.84	33.83	169	26.89	118.2	3.34	2.37	1467.
180	3.82	33.84	179	26.90	117.4	3.46	2.55	1467.
190	3.80	33.84	189	26.91	116.9	3.56	2.66	1468.
200	3.77	33.86	199	26.92	115.6	3.70	3.00	1468.
210	3.70	33.87	209	26.94	114.1	3.81	3.27	1467.
220	3.67	33.88	219	26.95	113.1	3.92	3.52	1468.
230	3.66	33.89	229	26.96	112.3	4.04	3.70	1468.
240	3.66	33.90	239	26.97	111.6	4.15	4.00	1468.
250	3.65	33.90	249	26.97	111.3	4.26	4.30	1468.
260	3.74	33.94	259	26.99	109.4	4.37	4.61	1469.
270	3.74	33.95	269	27.00	108.8	4.48	4.91	1469.
280	3.73	33.96	279	27.01	108.3	4.59	5.21	1469.
290	3.72	33.97	289	27.02	106.9	4.70	5.50	1469.
300	3.71	33.99	299	27.04	105.7	4.80	5.81	1469.





## OFFSHORE OCEANOGRAPHY GROUP

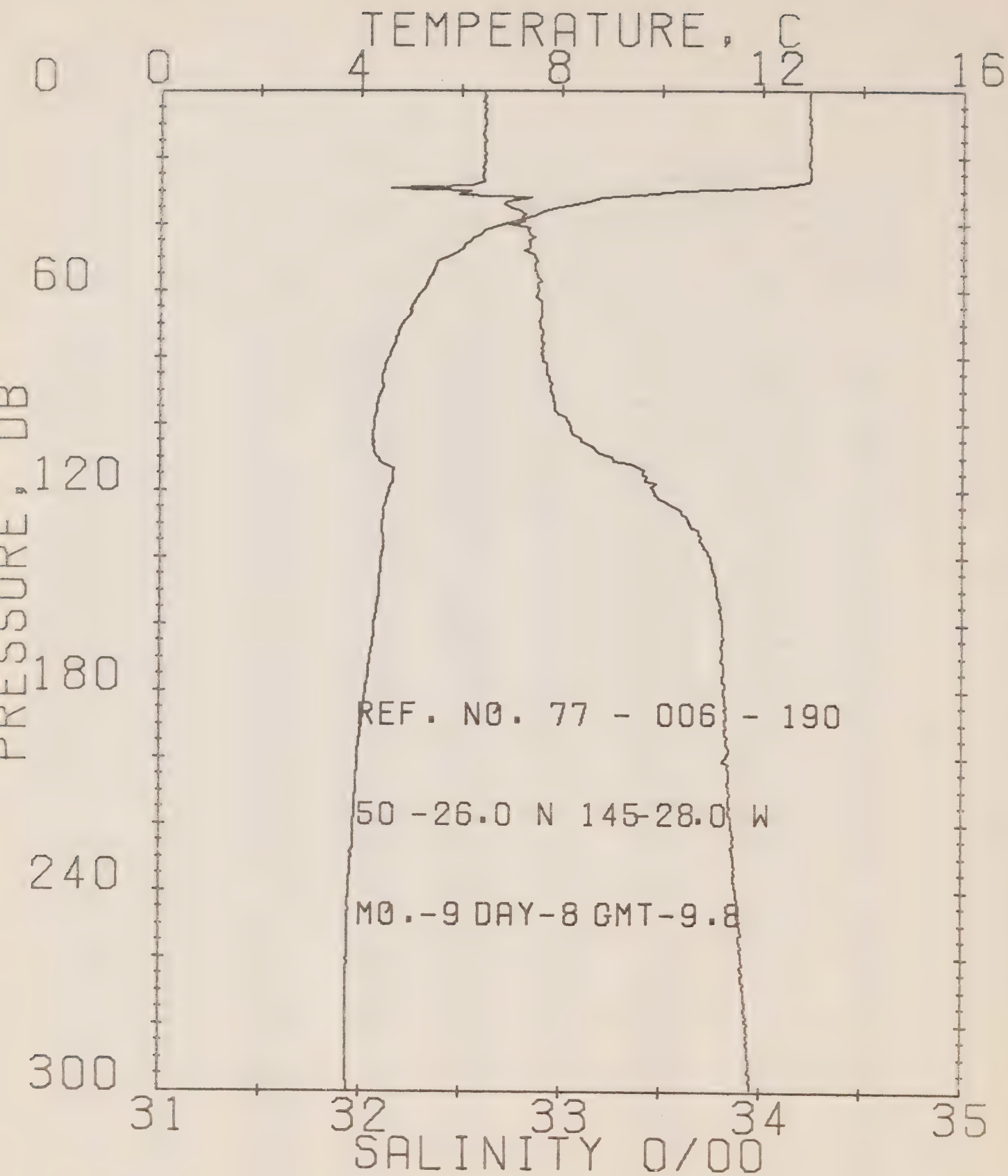
REFERENCE NO. 77- 6-189

DATE 8/ 9/77

POSITION 50-17.2N, 145-37.0W

GMT 7.9

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.92	32.61	0	24.58	336.7	.00	.00	1496.
5	12.90	32.62	5	24.59	335.5	.17	.00	1496.
10	12.92	32.61	10	24.58	336.8	.34	.02	1496.
15	12.91	32.61	15	24.59	336.4	.50	.04	1496.
20	12.88	32.62	20	24.60	335.6	.67	.07	1496.
25	12.22	32.63	25	24.75	322.8	.84	.13	1496.
30	8.80	32.78	30	25.43	256.0	.98	.15	1484.
35	8.62	32.84	35	25.79	221.6	1.10	.17	1475.
40	8.64	32.87	40	25.91	210.1	1.21	.20	1472.
45	8.59	32.89	45	25.98	203.8	1.31	.27	1471.
50	8.60	32.89	50	26.05	199.0	1.41	.32	1469.
55	4.86	32.90	55	26.05	197.2	1.51	.37	1467.
60	4.70	32.91	60	26.07	195.1	1.61	.40	1466.
65	4.64	32.91	65	26.08	194.4	1.71	.45	1466.
70	4.54	32.92	70	26.10	192.3	1.81	.50	1467.
75	4.45	32.93	75	26.12	190.5	1.90	.60	1467.
80	4.38	32.95	80	26.14	188.9	2.00	.71	1467.
90	4.24	32.99	89	26.19	184.2	2.18	.87	1467.
100	4.05	33.08	99	26.28	175.7	2.36	1.05	1466.
110	3.99	33.21	109	26.39	165.4	2.53	1.20	1466.
120	4.04	33.42	119	26.55	150.6	2.69	1.41	1467.
130	4.18	33.61	129	26.69	137.2	2.84	1.60	1466.
140	4.24	33.73	139	26.78	129.0	2.97	1.76	1466.
150	4.21	33.78	149	26.82	125.2	3.10	1.97	1469.
160	4.16	33.81	159	26.85	122.2	3.22	2.10	1469.
170	4.06	33.82	169	26.87	120.8	3.34	2.37	1468.
180	3.99	33.82	179	26.87	120.3	3.46	2.50	1466.
190	3.88	33.83	189	26.89	118.4	3.59	2.80	1468.
200	3.83	33.85	199	26.91	116.5	3.70	3.04	1466.
210	3.81	33.87	208	26.95	114.7	3.82	3.20	1466.
220	3.78	33.89	218	26.95	113.4	3.93	3.50	1466.
230	3.77	33.90	228	26.95	112.7	4.04	3.79	1468.
240	3.76	33.91	235	26.97	111.8	4.16	4.00	1466.
250	3.74	33.92	240	26.98	110.8	4.27	4.34	1466.
260	3.72	33.93	250	26.99	109.8	4.38	4.62	1466.
270	3.73	33.96	266	27.01	107.9	4.49	4.92	1469.
280	3.69	33.96	276	27.01	107.7	4.59	5.22	1469.
290	3.69	33.97	280	27.02	106.6	4.70	5.50	1469.
300	3.70	33.98	290	27.03	106.1	4.81	5.80	1469.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77-5-190

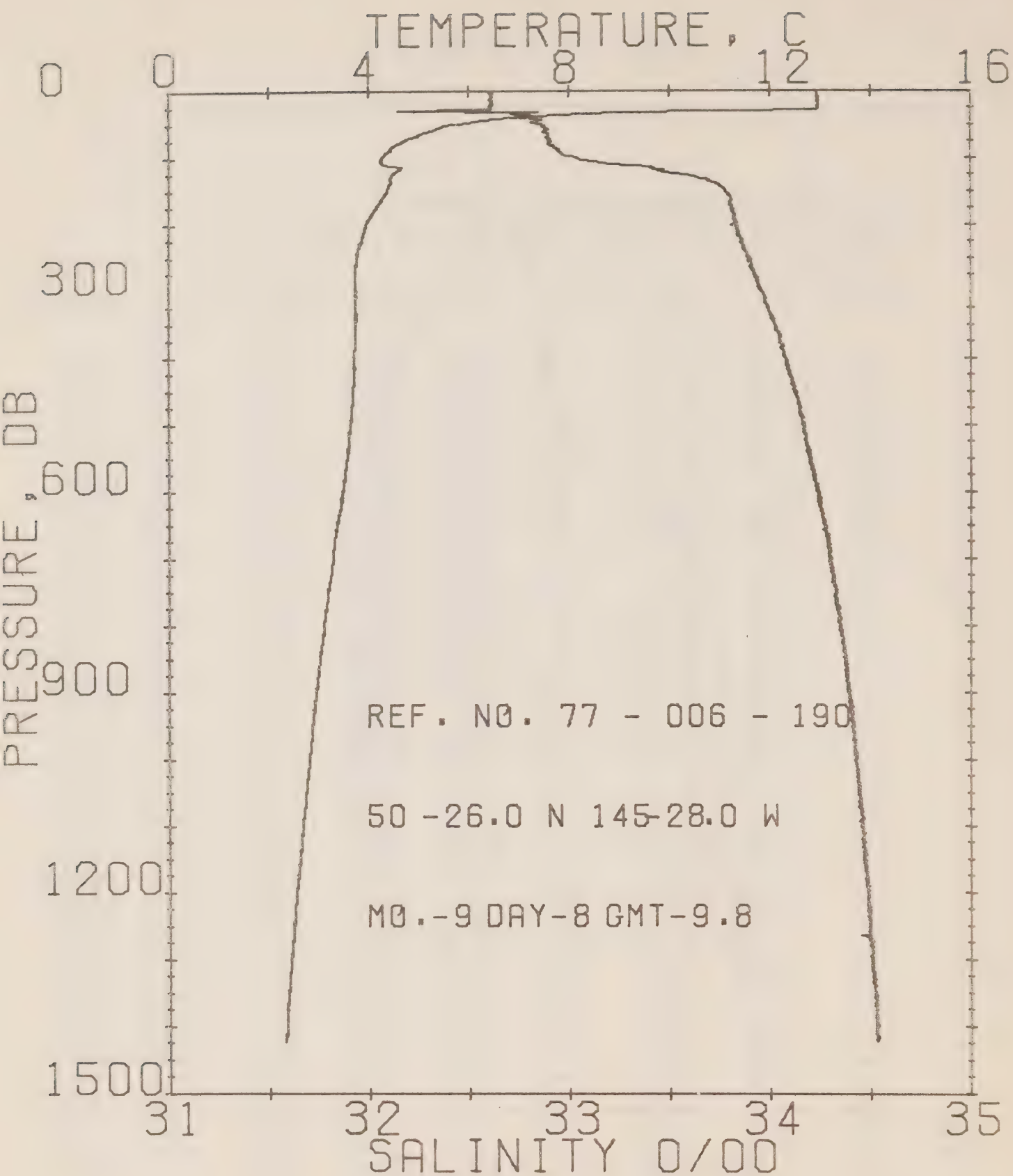
DATE 8/ 9/77

POSITION 30-26.0N, 145-28.0W

GMT 9.8

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.94	32.61	0	24.58	336.7	.00	.00	1498.
5	12.94	32.61	5	24.58	336.8	.17	.00	1498.
10	12.95	32.62	10	24.58	336.5	.34	.02	1498.
15	12.95	32.62	15	24.58	336.8	.51	.04	1498.
20	12.95	32.61	20	24.58	337.4	.67	.07	1498.
25	12.95	32.61	25	24.58	337.7	.84	.11	1498.
30	10.46	32.52	30	24.96	300.8	1.01	.15	1489.
35	7.94	32.74	35	25.53	246.6	1.14	.20	1480.
40	6.86	32.74	40	25.68	232.1	1.26	.24	1476.
45	6.19	32.84	45	25.85	216.6	1.37	.29	1474.
50	5.69	32.87	50	25.95	208.6	1.48	.34	1472.
55	5.42	32.86	55	25.97	204.9	1.58	.40	1471.
60	5.23	32.89	60	26.00	202.3	1.68	.46	1470.
65	4.99	32.90	65	26.04	198.8	1.78	.52	1469.
70	4.83	32.89	70	26.05	197.7	1.88	.59	1468.
75	4.68	32.90	75	26.07	195.4	1.98	.66	1468.
80	4.57	32.91	80	26.09	193.7	2.08	.74	1466.
90	4.41	32.95	89	26.14	189.4	2.27	.90	1467.
100	4.26	33.04	99	26.22	181.0	2.45	1.06	1467.
110	4.34	33.25	109	26.38	166.2	2.63	1.27	1466.
120	4.35	33.46	119	26.55	152.5	2.79	1.46	1469.
130	4.44	33.64	129	26.66	138.0	2.93	1.64	1469.
140	4.41	33.75	139	26.77	129.5	3.06	1.82	1469.
150	4.37	33.78	149	26.86	126.9	3.19	2.01	1469.
160	4.27	33.61	159	26.35	124.0	3.32	2.21	1469.
170	4.19	33.61	169	26.84	123.2	3.44	2.42	1469.
180	4.10	33.62	179	26.86	121.6	3.56	2.64	1469.
190	4.03	33.62	189	26.87	120.7	3.69	2.87	1468.
200	3.95	33.65	199	26.88	119.3	3.81	3.10	1468.
210	3.91	33.64	208	26.89	118.4	3.92	3.35	1468.
220	3.86	33.65	218	26.91	116.9	4.04	3.61	1468.
230	3.82	33.66	228	26.92	115.6	4.16	3.86	1468.
240	3.78	33.68	238	26.94	114.4	4.27	4.13	1468.
250	3.76	33.69	248	26.95	112.9	4.39	4.44	1468.
260	3.75	33.91	258	26.97	111.9	4.50	4.75	1469.
270	3.75	33.92	268	26.98	111.1	4.61	5.06	1469.
280	3.74	33.93	278	26.99	109.9	4.72	5.34	1469.
290	3.74	33.94	288	26.99	109.6	4.83	5.66	1469.
300	3.74	33.96	298	27.01	108.1	4.94	5.98	1469.





## OFFSHORE OCEANOGRAPHY GROUP

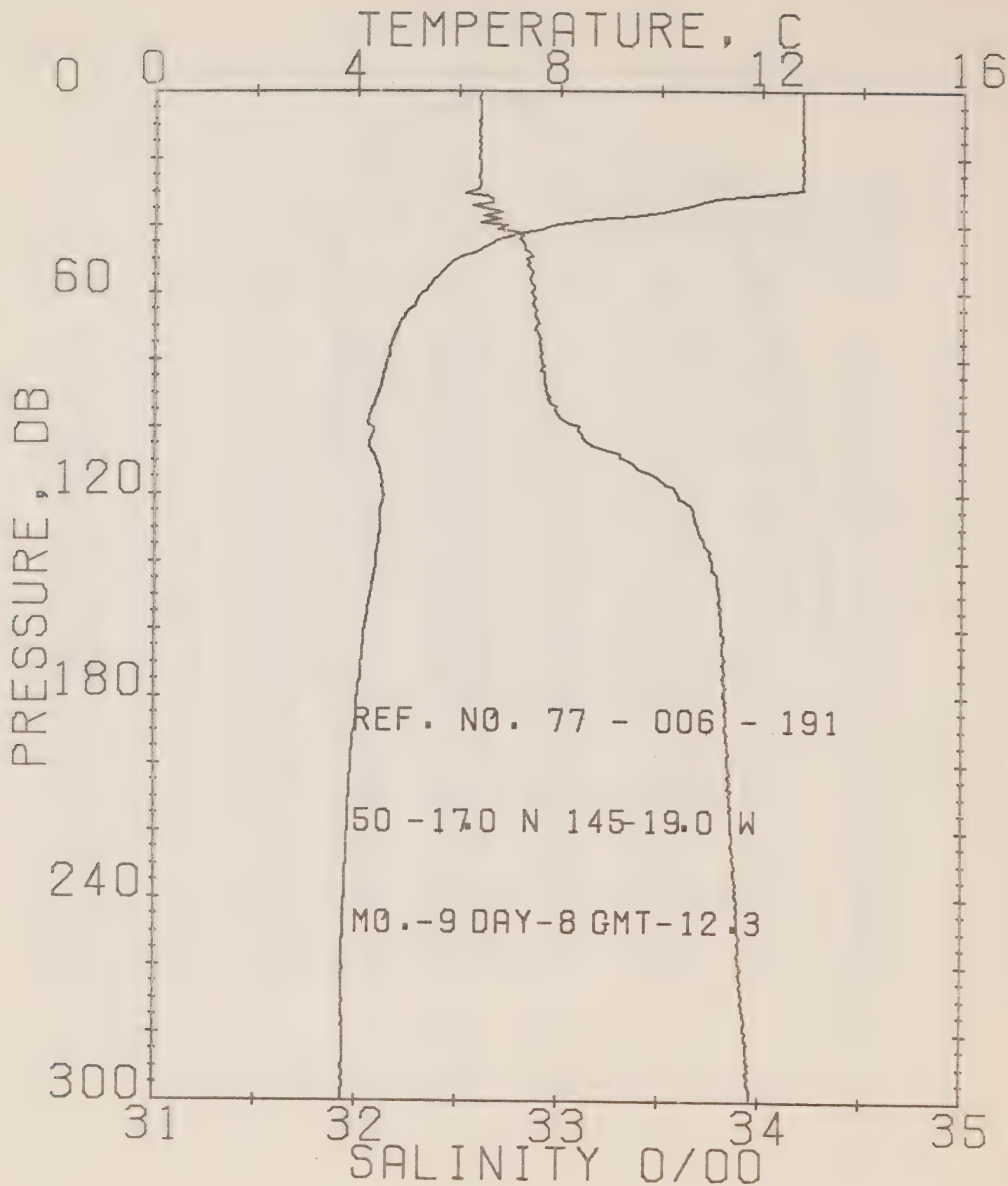
REFERENCE NO. 77- 6-190

DATE 8/ 9/77

POSITION 30-26.0N, 145-28.0W

GMT 9.8

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.94	32.61	0	24.56	336.7	.00	.00	1498.
50	5.69	32.67	50	25.93	208.6	1.48	.34	1472.
100	4.26	33.04	99	26.22	181.0	2.45	1.06	1467.
150	4.37	33.78	149	26.80	126.9	3.19	2.01	1469.
200	3.95	33.63	199	26.88	119.3	3.81	3.10	1468.
250	3.76	33.89	248	26.95	112.9	4.39	4.44	1468.
300	3.74	33.96	298	27.01	108.1	4.94	5.99	1469.
350	3.74	34.02	347	27.06	104.1	5.47	7.74	1470.
400	3.71	34.07	397	27.10	100.3	5.98	9.69	1471.
450	3.68	34.13	446	27.15	95.9	6.47	11.82	1472.
500	3.63	34.17	496	27.19	92.7	6.95	14.11	1472.
550	3.56	34.20	545	27.22	90.3	7.40	16.57	1473.
600	3.48	34.24	595	27.25	87.1	7.85	19.17	1473.
650	3.36	34.27	644	27.29	83.7	8.28	21.89	1474.
700	3.27	34.31	694	27.33	80.5	8.69	24.71	1474.
750	3.18	34.32	743	27.35	78.5	9.08	27.65	1475.
800	3.09	34.35	793	27.38	76.0	9.47	30.70	1475.
850	3.01	34.38	842	27.41	73.2	9.84	33.85	1476.
900	2.94	34.39	891	27.43	71.7	10.21	37.09	1476.
950	2.86	34.42	941	27.45	69.6	10.56	40.42	1477.
1000	2.80	34.43	990	27.47	68.1	10.91	43.85	1477.
1050	2.73	34.44	1040	27.48	67.0	11.24	47.36	1478.
1100	2.66	34.46	1089	27.51	65.1	11.57	50.99	1478.
1150	2.61	34.47	1138	27.52	63.9	11.90	54.66	1479.
1200	2.53	34.49	1188	27.54	62.1	12.21	58.45	1480.
1250	2.48	34.50	1237	27.55	60.9	12.52	62.30	1480.
1300	2.43	34.51	1286	27.57	60.0	12.82	66.24	1481.
1350	2.38	34.52	1336	27.58	58.6	13.12	70.25	1481.
1400	2.34	34.54	1385	27.60	57.5	13.41	74.32	1482.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6-191

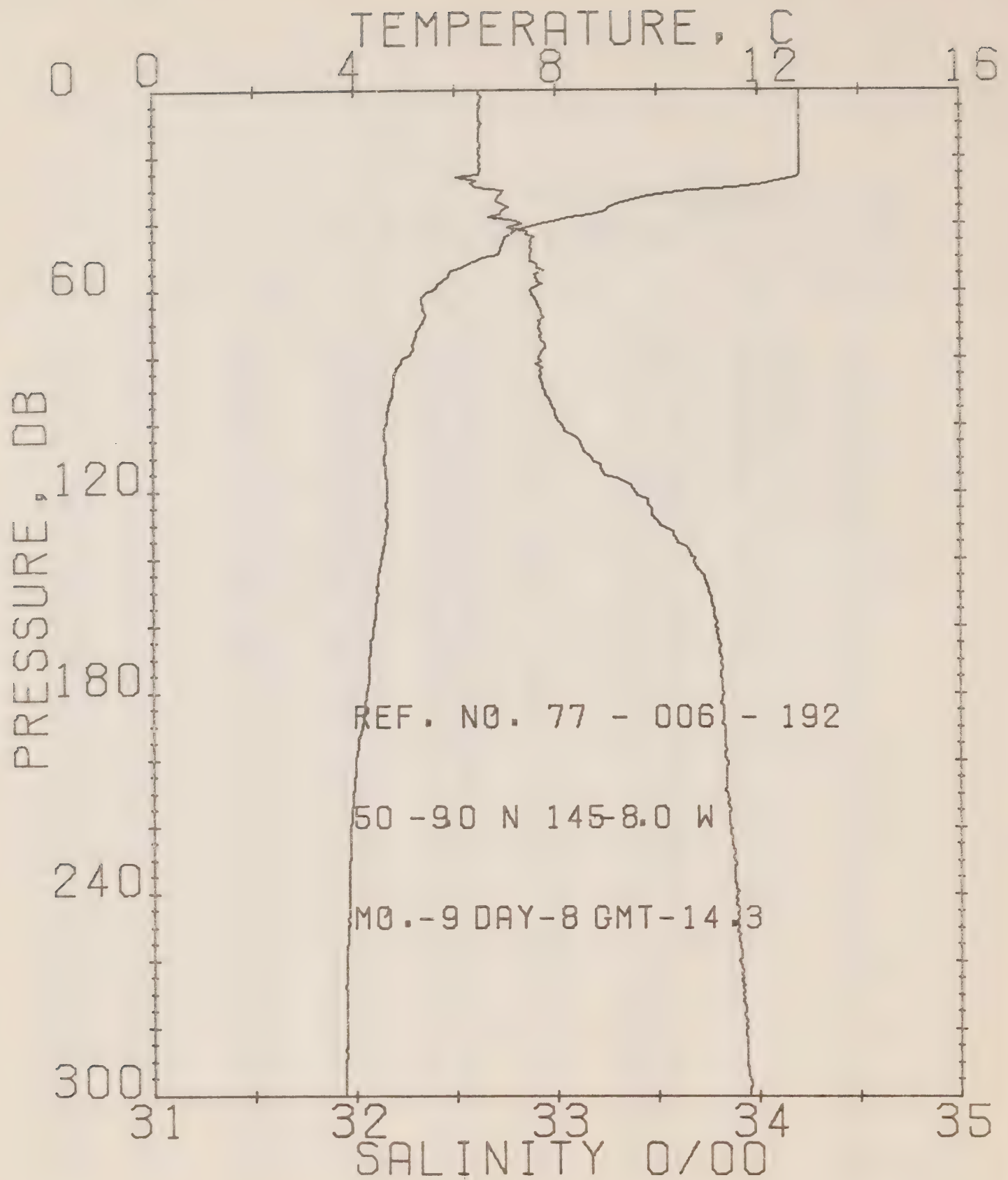
DATE 8/ 9/77

POSITION 50-17.2N, 145-18.5W

GMT 12.3

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.81	32.60	0	24.60	334.9	.00	.00	1497.
5	12.81	32.61	5	24.60	334.8	.17	.00	1497.
10	12.81	32.60	10	24.60	335.1	.34	.02	1497.
15	12.82	32.60	15	24.60	335.4	.50	.04	1497.
20	12.81	32.60	20	24.60	335.5	.67	.07	1498.
25	12.82	32.60	25	24.60	335.8	.84	.11	1498.
30	12.32	32.55	30	24.65	330.9	1.01	.15	1496.
35	10.28	32.64	35	25.09	288.7	1.16	.20	1489.
40	7.87	32.73	40	25.53	246.6	1.29	.26	1480.
45	6.66	32.82	45	25.77	224.1	1.41	.31	1476.
50	5.94	32.84	50	25.87	214.0	1.52	.36	1473.
55	5.59	32.86	55	25.94	208.2	1.62	.42	1471.
60	5.30	32.86	60	25.97	204.9	1.73	.48	1470.
65	5.01	32.88	65	26.02	200.1	1.83	.54	1469.
70	4.82	32.89	70	26.05	197.8	1.93	.61	1469.
75	4.67	32.90	75	26.08	195.1	2.03	.68	1468.
80	4.59	32.91	80	26.09	193.9	2.12	.76	1468.
90	4.40	32.94	89	26.13	189.9	2.31	.92	1467.
100	4.32	33.09	99	26.26	177.4	2.50	1.10	1467.
110	4.38	33.34	109	26.45	160.0	2.67	1.29	1468.
120	4.52	33.59	119	26.63	142.6	2.82	1.46	1469.
130	4.44	33.69	129	26.72	134.4	2.96	1.64	1469.
140	4.36	33.76	139	26.78	128.5	3.09	1.82	1469.
150	4.26	33.80	149	26.83	124.2	3.22	2.00	1469.
160	4.14	33.81	159	26.85	122.4	3.34	2.20	1468.
170	4.09	33.82	169	26.86	121.3	3.46	2.40	1468.
180	4.01	33.82	179	26.87	120.3	3.58	2.62	1468.
190	3.95	33.83	189	26.88	119.5	3.70	2.85	1468.
200	3.89	33.84	199	26.90	117.9	3.82	3.08	1468.
210	3.85	33.86	208	26.91	116.4	3.94	3.32	1468.
220	3.82	33.86	218	26.92	115.8	4.05	3.58	1468.
230	3.80	33.87	228	26.93	114.7	4.17	3.84	1468.
240	3.77	33.89	238	26.95	113.5	4.28	4.12	1468.
250	3.75	33.89	248	26.95	113.1	4.40	4.40	1468.
260	3.75	33.91	258	26.96	112.1	4.51	4.69	1469.
270	3.75	33.92	268	26.97	111.2	4.62	4.99	1469.
280	3.75	33.94	278	26.99	109.6	4.73	5.30	1469.
290	3.74	33.95	288	27.00	108.9	4.84	5.62	1469.
300	3.73	33.95	298	27.00	108.6	4.95	5.95	1469.





## OFFSHORE OCEANOGRAPHY GROUP

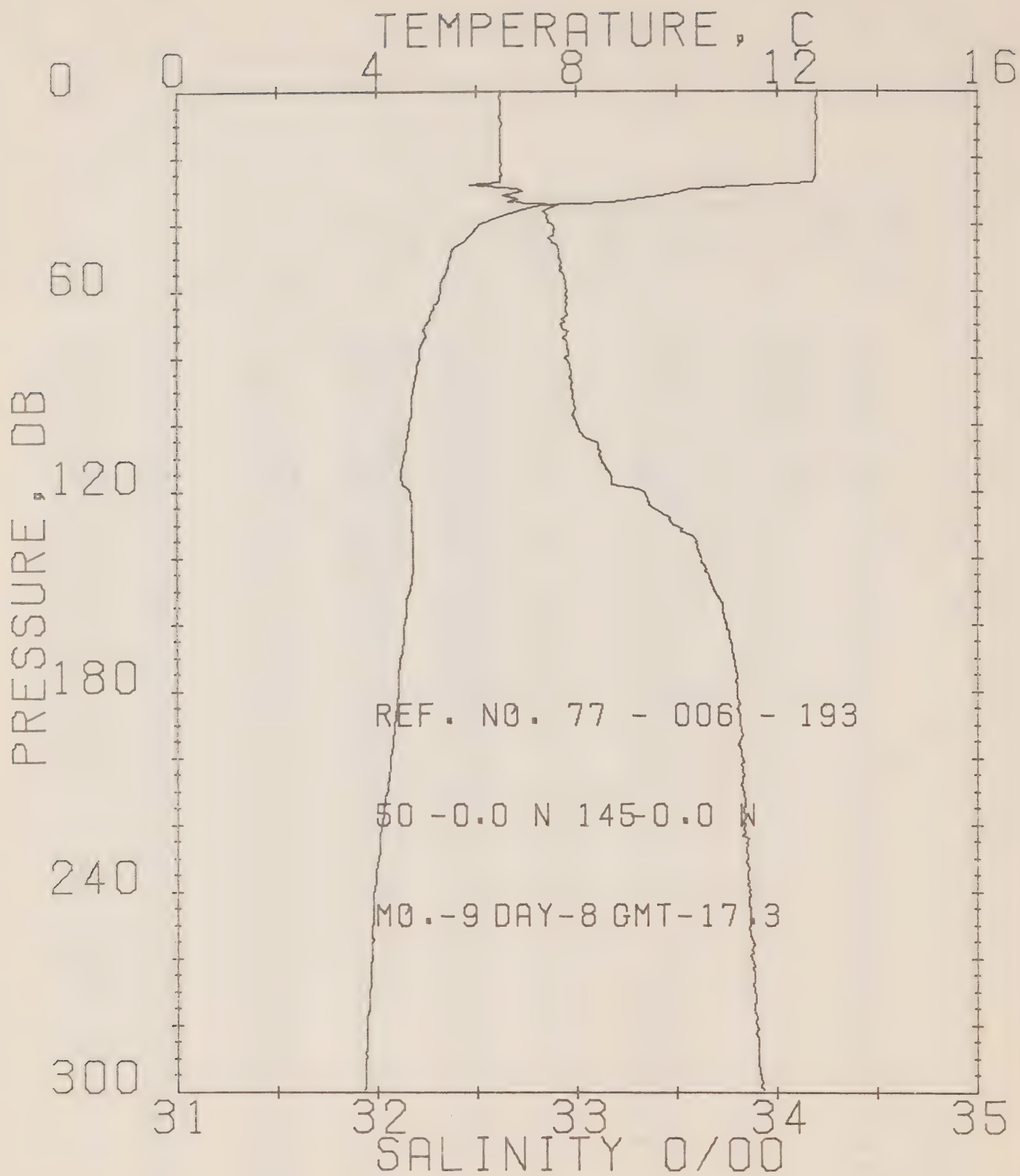
REFERENCE NO. 77- 6-192

DATE 8/ 9/77

POSITION 30- 6.6N, 145- 7.5W

GMT 14,3

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA S	POT. EN	SOUND
0	12.83	32.82	0	24.61	333.9	.00	.00	1497.
5	12.83	32.83	5	24.61	333.7	.17	.00	1497.
10	12.83	32.83	10	24.62	333.5	.33	.02	1498.
15	12.84	32.82	15	24.61	334.6	.50	.04	1498.
20	12.83	32.82	20	24.61	334.2	.67	.07	1498.
25	12.83	32.82	25	24.61	334.5	.84	.11	1498.
30	10.76	32.72	30	25.07	290.5	1.00	.15	1491.
35	9.67	32.76	35	25.38	261.1	1.13	.26	1485.
40	7.67	32.84	40	25.65	235.7	1.26	.25	1479.
45	6.96	32.86	45	25.78	223.3	1.38	.29	1477.
50	6.57	32.87	50	25.83	218.7	1.49	.35	1475.
55	5.57	32.90	55	25.93	208.5	1.59	.41	1473.
60	5.51	32.87	60	25.96	206.4	1.70	.47	1471.
65	5.57	32.92	65	26.01	201.5	1.80	.55	1471.
70	5.55	32.92	70	26.01	201.0	1.90	.60	1471.
75	5.16	32.93	75	26.04	198.1	2.00	.67	1470.
80	4.96	32.92	80	26.05	197.3	2.10	.75	1469.
90	4.75	32.94	89	26.10	193.0	2.29	.92	1469.
100	4.61	33.03	99	26.18	185.3	2.48	1.10	1466.
110	4.58	33.17	109	26.30	174.5	2.66	1.30	1469.
120	4.63	33.39	119	26.46	158.5	2.83	1.49	1469.
130	4.63	33.51	129	26.56	149.7	2.98	1.69	1470.
140	4.51	33.68	139	26.71	135.4	3.12	1.86	1470.
150	4.44	33.75	149	26.77	129.7	3.26	2.02	1469.
160	4.35	33.79	159	26.81	126.0	3.38	2.26	1469.
170	4.27	33.82	169	26.84	123.3	3.51	2.49	1469.
180	4.21	33.82	179	26.85	122.3	3.63	2.71	1469.
190	4.12	33.83	189	26.87	120.9	3.75	2.94	1469.
200	4.00	33.84	199	26.89	119.0	3.87	3.18	1469.
210	3.95	33.84	209	26.89	118.4	3.99	3.40	1469.
220	3.90	33.88	216	26.92	116.4	4.11	3.66	1468.
230	3.88	33.88	223	26.93	115.2	4.22	3.95	1469.
240	3.88	33.89	230	26.94	113.9	4.34	4.22	1469.
250	3.85	33.90	245	26.95	113.5	4.45	4.51	1469.
260	3.82	33.90	256	26.96	112.9	4.57	4.80	1469.
270	3.81	33.92	266	26.97	111.6	4.68	5.10	1469.
280	3.81	33.94	273	26.98	110.4	4.79	5.41	1469.
290	3.79	33.94	286	26.99	109.9	4.90	5.73	1469.
300	3.78	33.95	295	27.00	109.3	5.01	6.06	1469.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6-193

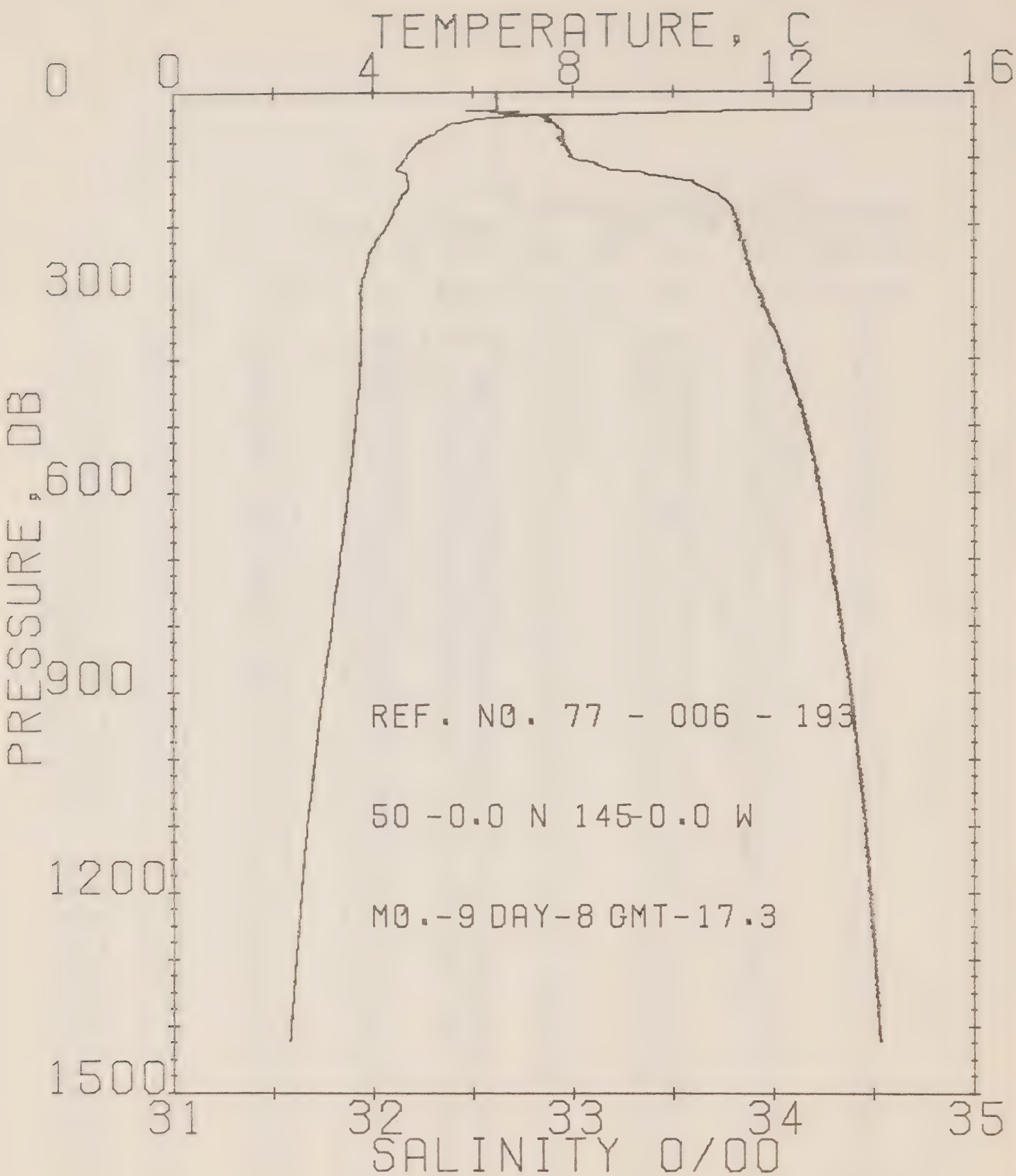
DATE 8/ 9/77

POSITION 50- .0N, 145- .0W

GMT 17.3

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.79	32.62	0	24.61	333.4	.00	.00	1497.
5	12.77	32.62	5	24.62	333.0	.17	.00	1497.
10	12.77	32.63	10	24.62	332.6	.33	.02	1497.
15	12.77	32.62	15	24.62	333.3	.50	.04	1497.
20	12.77	32.62	20	24.62	333.3	.67	.07	1497.
25	12.77	32.62	25	24.62	333.2	.83	.11	1498.
30	10.12	32.73	30	25.18	279.8	.99	.15	1488.
35	6.96	32.86	35	25.77	224.3	1.12	.19	1477.
40	6.06	32.88	40	25.90	211.8	1.23	.23	1473.
45	5.73	32.88	45	25.93	208.3	1.33	.28	1472.
50	5.46	32.91	50	25.99	202.6	1.44	.33	1471.
55	5.37	32.94	55	26.02	199.9	1.54	.38	1471.
60	5.27	32.95	60	26.05	197.6	1.64	.44	1470.
65	5.14	32.95	65	26.06	196.7	1.74	.50	1470.
70	5.00	32.92	70	26.05	197.2	1.83	.57	1469.
75	4.91	32.95	75	26.09	193.9	1.93	.64	1469.
80	4.86	32.94	80	26.09	194.1	2.03	.72	1469.
90	4.71	32.98	89	26.13	190.1	2.22	.89	1469.
100	4.64	33.00	99	26.15	187.7	2.41	1.07	1468.
110	4.52	33.12	109	26.26	177.9	2.59	1.26	1468.
120	4.66	33.33	119	26.41	163.6	2.76	1.47	1469.
130	4.70	33.46	129	26.53	153.0	2.92	1.67	1470.
140	4.72	33.62	139	26.63	142.6	3.07	1.87	1470.
150	4.63	33.66	149	26.70	136.9	3.21	2.08	1470.
160	4.55	33.74	159	26.75	131.5	3.34	2.29	1470.
170	4.46	33.78	169	26.79	127.9	3.47	2.51	1470.
180	4.42	33.80	179	26.81	126.4	3.60	2.73	1470.
190	4.35	33.81	189	26.83	124.6	3.72	2.97	1470.
200	4.28	33.83	199	26.85	122.8	3.85	3.21	1470.
210	4.19	33.83	209	26.86	121.8	3.97	3.47	1470.
220	4.09	33.84	218	26.88	120.1	4.09	3.74	1469.
230	4.02	33.85	228	26.89	118.7	4.21	4.01	1469.
240	3.93	33.86	238	26.91	117.2	4.33	4.29	1469.
250	3.91	33.86	248	26.92	116.7	4.44	4.58	1469.
260	3.89	33.87	258	26.92	115.9	4.56	4.88	1469.
270	3.85	33.89	268	26.94	114.4	4.68	5.19	1469.
280	3.78	33.90	278	26.95	113.2	4.79	5.51	1469.
290	3.77	33.91	288	26.96	112.5	4.90	5.84	1469.
300	3.74	33.93	298	26.98	110.5	5.01	6.18	1469.





## OFFSHORE OCEANOGRAPHY GROUP

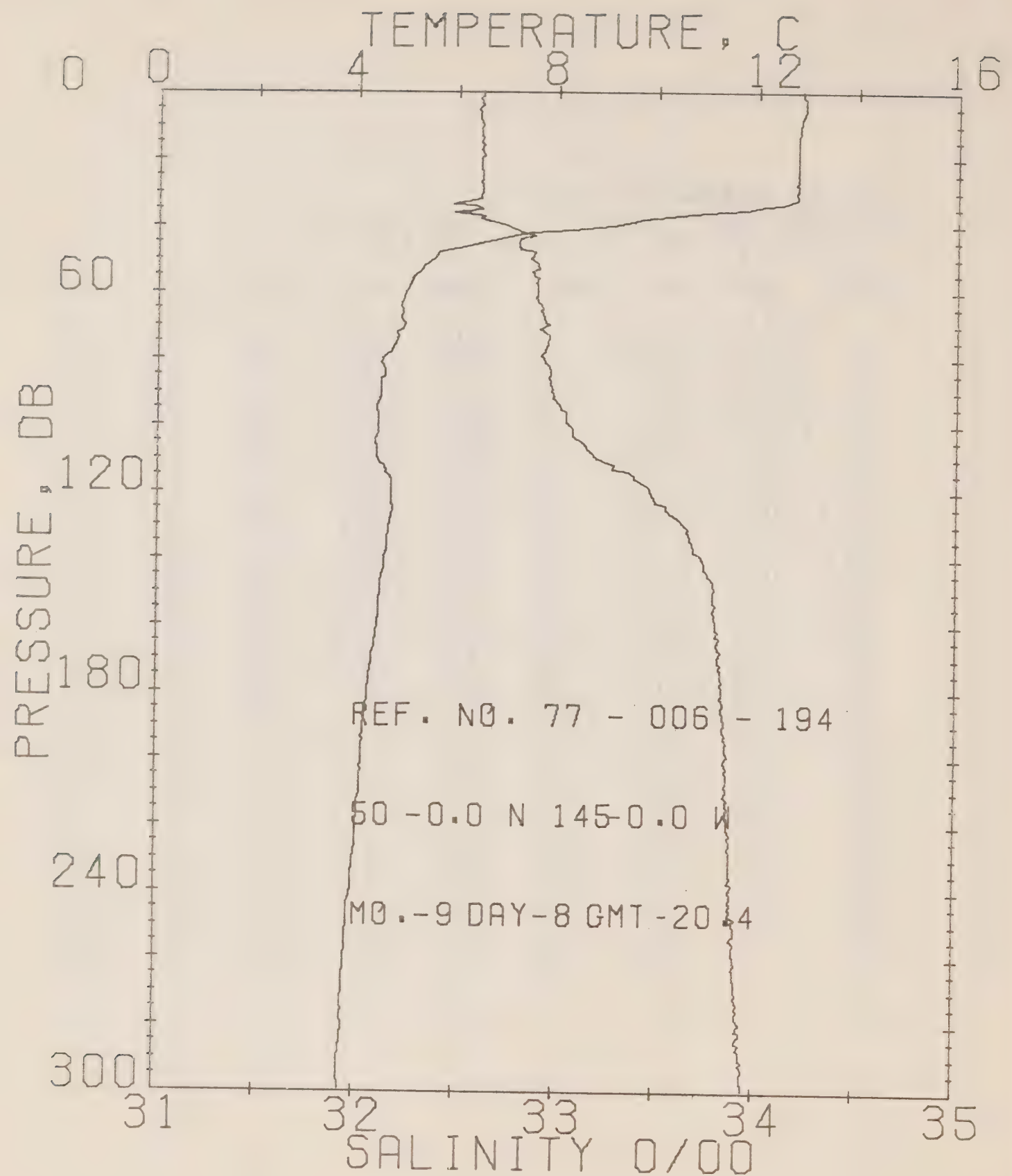
REFERENCE NO. 77- 6-193

DATE 8/ 9/77

POSITION 50- .0N, 145- .0W

GMT 17.3

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.79	32.62	0	24.61	333.4	.00	.00	1497.
50	5.46	32.91	50	25.99	202.6	1.44	.33	1471.
100	4.64	33.00	99	26.15	187.7	2.41	1.07	1468.
150	4.63	33.66	149	26.70	136.9	3.21	2.08	1470.
200	4.28	33.83	199	26.85	122.8	3.85	3.21	1470.
250	3.91	33.86	248	26.92	116.7	4.44	4.58	1469.
300	3.74	33.93	298	26.98	110.5	5.01	6.18	1469.
350	3.77	34.00	347	27.04	106.0	5.56	7.97	1470.
400	3.75	34.06	397	27.09	101.7	6.08	9.96	1471.
450	3.71	34.11	446	27.13	97.6	6.57	12.12	1472.
500	3.65	34.16	496	27.18	93.7	7.05	14.43	1472.
550	3.57	34.20	545	27.22	90.3	7.51	16.88	1473.
600	3.49	34.24	595	27.26	87.0	7.96	19.49	1473.
650	3.42	34.26	644	27.28	85.0	8.39	22.24	1474.
700	3.32	34.29	694	27.31	82.2	8.81	25.11	1474.
750	3.23	34.31	743	27.34	79.9	9.21	28.12	1475.
800	3.16	34.34	793	27.36	77.7	9.61	31.23	1476.
850	3.06	34.36	842	27.39	75.1	9.99	34.45	1476.
900	2.98	34.38	891	27.41	73.3	10.36	37.74	1476.
950	2.90	34.40	941	27.44	71.3	10.72	41.13	1477.
1000	2.83	34.43	990	27.47	68.6	11.07	44.61	1477.
1050	2.75	34.44	1040	27.48	67.1	11.41	48.18	1478.
1100	2.67	34.46	1089	27.51	65.1	11.74	51.81	1478.
1150	2.61	34.46	1138	27.53	63.5	12.06	55.51	1479.
1200	2.56	34.48	1188	27.53	62.8	12.38	59.30	1480.
1250	2.50	34.49	1237	27.55	61.9	12.69	63.18	1480.
1300	2.44	34.51	1286	27.56	60.3	12.99	67.14	1481.
1350	2.40	34.52	1336	27.58	58.8	13.29	71.17	1482.
1400	2.35	34.53	1385	27.59	57.8	13.59	75.28	1482.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6-194

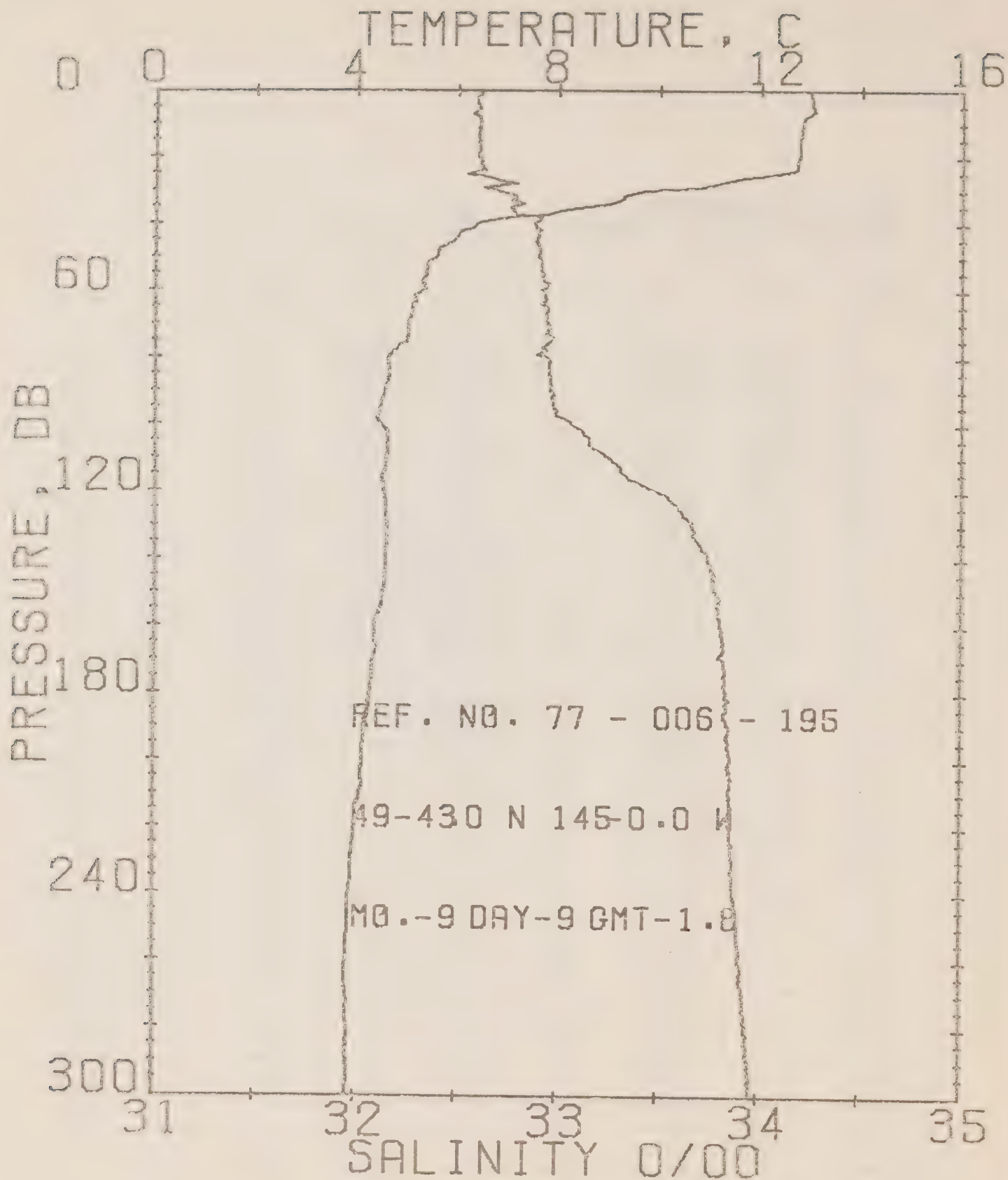
DATE 8/ 9/77

POSITION 50- .0N, 145- .0W

GMT 20.5

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.89	32.62	0	24.60	335.2	.00	.00	1498.
5	12.92	32.60	5	24.58	337.2	.17	.00	1498.
10	12.83	32.62	10	24.61	334.3	.34	.02	1497.
15	12.80	32.61	15	24.61	334.3	.50	.04	1497.
20	12.79	32.62	20	24.61	334.0	.67	.07	1498.
25	12.79	32.62	25	24.61	334.1	.84	.11	1498.
30	12.78	32.62	30	24.62	333.7	1.00	.15	1498.
35	11.79	32.62	35	24.80	316.1	1.17	.21	1494.
40	9.11	32.74	40	25.36	263.5	1.31	.26	1485.
45	6.45	32.81	45	25.79	222.2	1.43	.31	1475.
50	5.53	32.87	50	25.95	206.6	1.54	.37	1471.
55	5.14	32.88	55	26.01	201.5	1.64	.42	1470.
60	4.98	32.90	60	26.04	198.5	1.74	.48	1469.
65	4.91	32.93	65	26.07	195.7	1.84	.54	1469.
70	4.94	32.90	70	26.09	193.7	1.94	.61	1469.
75	4.78	32.95	75	26.10	192.4	2.03	.68	1469.
80	4.51	32.93	80	26.12	191.2	2.13	.76	1468.
90	4.48	32.98	89	26.15	187.7	2.32	.92	1468.
100	4.43	33.00	99	26.23	180.9	2.50	1.10	1468.
110	4.41	33.20	109	26.34	170.7	2.68	1.29	1468.
120	4.70	33.47	119	26.52	153.5	2.84	1.47	1470.
130	4.64	33.64	129	26.66	139.8	2.99	1.66	1470.
140	4.56	33.72	139	26.74	133.0	3.12	1.85	1470.
150	4.47	33.79	149	26.80	127.4	3.25	2.04	1470.
160	4.42	33.80	159	26.81	125.8	3.38	2.24	1470.
170	4.32	33.82	169	26.83	124.0	3.50	2.45	1469.
180	4.23	33.83	179	26.86	121.9	3.63	2.57	1469.
190	4.16	33.84	189	26.87	120.3	3.75	2.90	1469.
200	4.12	33.86	199	26.89	119.1	3.87	3.14	1469.
210	4.10	33.86	209	26.89	118.5	3.99	3.39	1469.
220	4.04	33.80	218	26.90	117.7	4.11	3.64	1469.
230	3.97	33.88	228	26.92	115.9	4.22	3.91	1469.
240	3.92	33.88	238	26.93	115.5	4.34	4.19	1469.
250	3.86	33.90	248	26.95	113.5	4.45	4.48	1469.
260	3.81	33.91	258	26.96	112.6	4.57	4.77	1469.
270	3.78	33.91	268	26.97	112.0	4.68	5.07	1469.
280	3.79	33.94	278	26.99	110.2	4.79	5.38	1469.
290	3.72	33.94	288	26.99	109.6	4.90	5.71	1469.
300	3.74	33.95	298	27.01	108.6	5.01	6.03	1469.





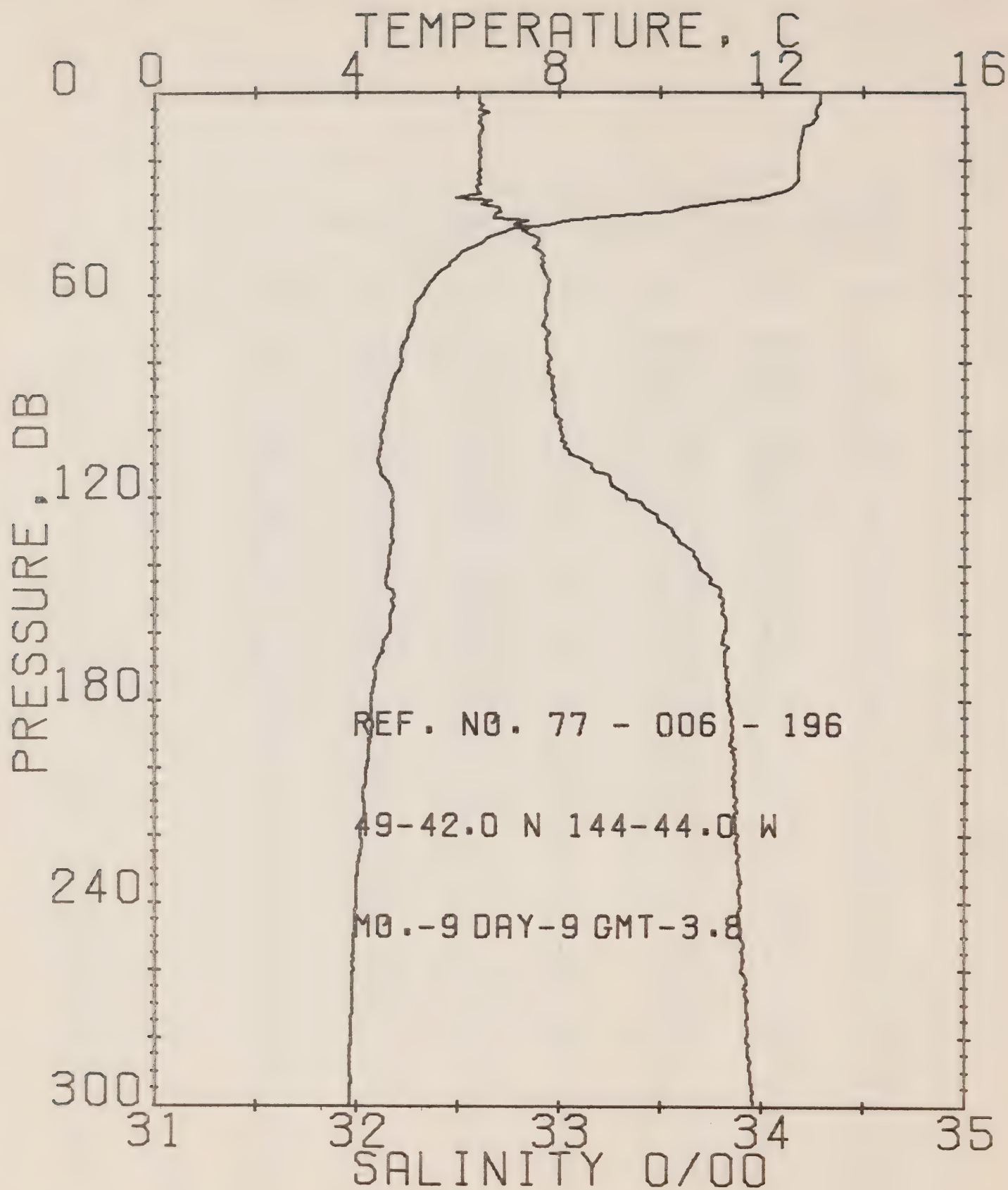
## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8-195

DATE 9/ 9/77

POSITION 49-45.0N, 145- .0W GMT 1.8

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA S	POT. EN	SOUND
0	15.00	32.81	0	24.57	337.5	.00	.00	1498.
5	15.03	32.80	5	24.58	339.0	.17	.00	1498.
10	12.82	32.81	10	24.58	334.7	.34	.02	1497.
15	12.77	32.81	15	24.61	334.4	.51	.04	1497.
20	12.76	32.80	20	24.61	334.4	.67	.07	1497.
25	12.17	32.55	25	24.68	327.7	.84	.11	1495.
30	9.85	32.87	30	25.18	279.6	.99	.15	1487.
35	8.47	32.77	35	25.48	251.8	1.12	.19	1482.
40	6.59	32.88	40	25.86	215.7	1.24	.24	1475.
45	5.89	32.89	45	25.92	209.3	1.34	.28	1475.
50	5.55	32.90	50	25.97	204.5	1.45	.35	1471.
55	5.39	32.93	55	26.01	200.9	1.55	.39	1471.
60	5.29	32.92	60	26.02	200.5	1.65	.44	1470.
65	5.10	32.95	65	26.06	196.3	1.75	.51	1470.
70	5.01	32.94	70	26.07	195.6	1.84	.58	1469.
75	5.00	32.96	75	26.08	194.4	1.94	.65	1470.
80	4.82	32.95	80	26.10	192.4	2.04	.72	1468.
90	4.55	32.96	89	26.15	189.7	2.23	.89	1468.
100	4.50	33.06	99	26.21	182.0	2.41	1.07	1465.
110	4.58	33.25	109	26.36	168.1	2.59	1.26	1469.
120	4.55	33.49	119	26.55	150.6	2.75	1.45	1469.
130	4.51	33.66	129	26.68	138.0	2.89	1.65	1470.
140	4.58	33.74	139	26.75	132.0	3.03	1.81	1470.
150	4.53	33.79	149	26.79	127.9	3.16	2.01	1470.
160	4.58	33.81	159	26.82	124.9	3.29	2.20	1469.
170	4.53	33.82	169	26.84	123.4	3.41	2.41	1469.
180	4.27	33.84	179	26.86	121.9	3.53	2.60	1469.
190	4.15	33.85	189	26.88	119.6	3.65	2.80	1469.
200	4.13	33.86	199	26.89	119.1	3.77	3.10	1469.
210	4.08	33.88	209	26.89	118.8	3.89	3.35	1469.
220	3.98	33.88	218	26.90	117.8	4.01	3.61	1469.
230	3.95	33.87	228	26.92	116.3	4.13	3.87	1469.
240	3.88	33.87	238	26.93	115.6	4.24	4.15	1469.
250	3.86	33.90	248	26.95	113.4	4.36	4.44	1469.
260	3.83	33.91	258	26.96	112.8	4.47	4.75	1469.
270	3.85	33.93	268	26.98	111.0	4.59	5.05	1469.
280	3.86	33.94	278	26.98	110.7	4.69	5.35	1469.
290	3.85	33.96	288	27.00	109.4	4.80	5.67	1470.
300	3.84	33.97	298	27.01	108.6	4.91	5.99	1470.



## OFFSHORE OCEANOGRAPHY GROUP

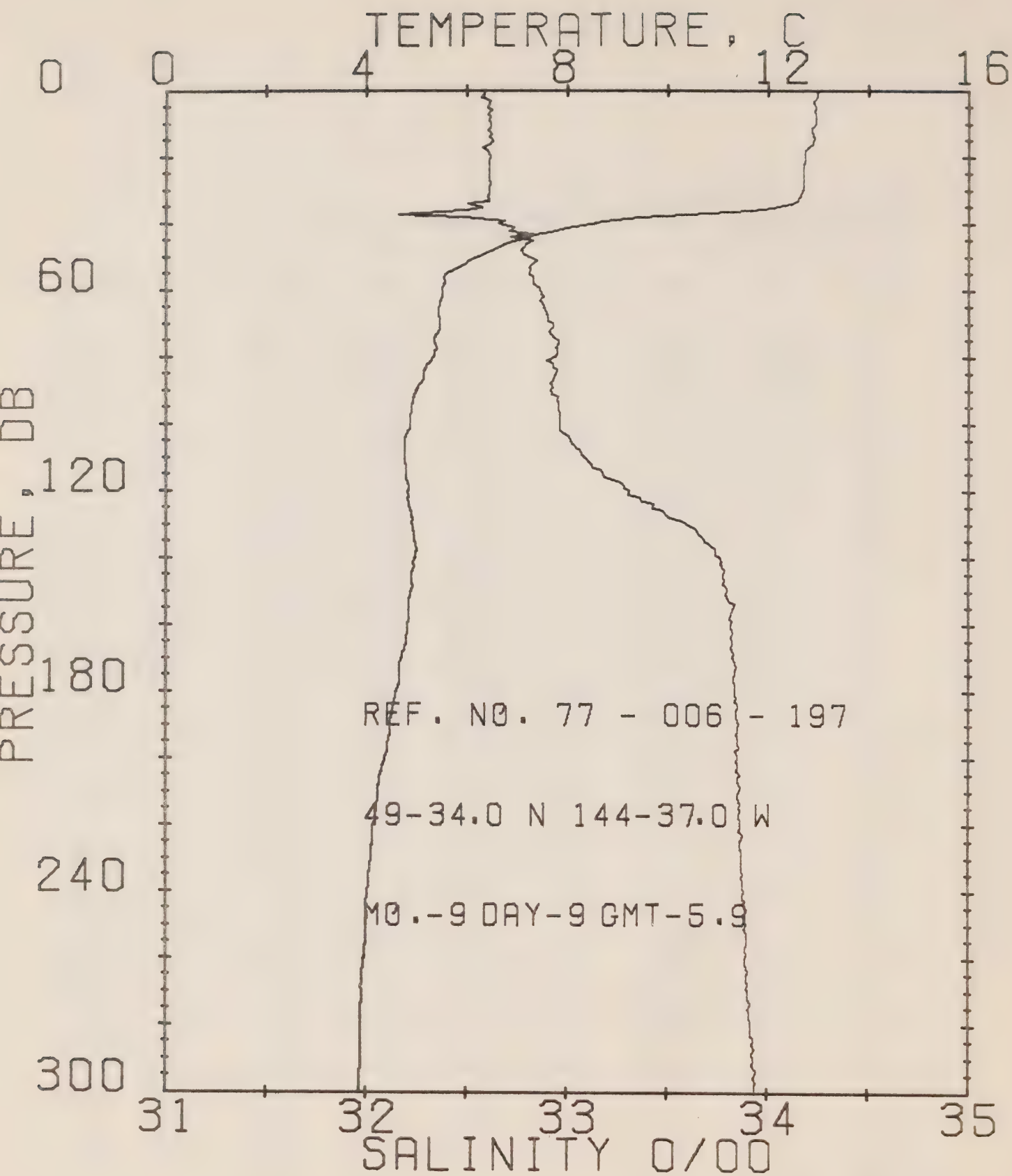
REFERENCE NO. 77- 6-196

DATE 9/ 9/77

POSITION 49-42.00N, 144-44.00W GMT 3.8

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	13.14	32.80	0	24.53	341.1	.00	.00	1498.
5	13.07	32.81	5	24.55	339.7	.17	.00	1498.
10	12.86	32.82	10	24.60	334.8	.34	.02	1498.
15	12.75	32.81	15	24.61	334.0	.51	.04	1497.
20	12.73	32.81	20	24.62	333.7	.67	.07	1497.
25	12.72	32.81	25	24.63	332.9	.84	.11	1497.
30	12.25	32.81	30	24.71	324.5	1.01	.15	1496.
35	10.23	32.71	35	25.15	283.0	1.16	.20	1489.
40	7.19	32.85	40	25.75	228.1	1.29	.25	1478.
45	6.59	32.89	45	25.37	214.9	1.40	.30	1475.
50	5.88	32.92	50	25.95	206.7	1.50	.35	1473.
55	5.53	32.94	55	26.01	201.2	1.60	.41	1471.
60	5.51	32.94	60	26.05	199.1	1.70	.46	1471.
65	5.15	32.95	65	26.05	197.7	1.80	.53	1470.
70	5.02	32.93	70	26.06	196.6	1.90	.59	1469.
75	4.91	32.94	75	26.08	194.8	2.00	.67	1469.
80	4.68	32.95	80	26.09	193.9	2.10	.74	1469.
90	4.65	32.98	89	26.14	189.4	2.20	.91	1468.
100	4.51	33.01	99	26.18	185.6	2.48	1.09	1468.
110	4.45	33.16	109	26.30	174.2	2.66	1.29	1468.
120	4.71	33.34	119	26.41	163.4	2.83	1.48	1470.
130	4.70	33.55	129	26.59	146.9	2.98	1.66	1470.
140	4.63	33.70	139	26.71	135.9	3.12	1.87	1470.
150	4.70	33.81	149	26.79	128.2	3.25	2.07	1471.
160	4.65	33.82	159	26.86	127.0	3.39	2.27	1471.
170	4.56	33.83	169	26.84	123.2	3.51	2.43	1470.
180	4.50	33.85	179	26.85	122.5	3.63	2.70	1469.
190	4.28	33.86	189	26.87	120.7	3.75	2.93	1470.
200	4.20	33.87	199	26.89	119.1	3.87	3.17	1469.
210	4.16	33.88	209	26.90	117.8	3.99	3.41	1469.
220	4.09	33.89	218	26.91	116.8	4.11	3.67	1469.
230	4.02	33.89	228	26.92	116.1	4.22	3.94	1469.
240	3.99	33.90	238	26.93	115.0	4.34	4.22	1469.
250	3.95	33.89	248	26.93	115.0	4.45	4.50	1469.
260	3.93	33.90	253	26.94	114.0	4.57	4.80	1469.
270	3.91	33.93	268	26.96	112.2	4.68	5.10	1469.
280	3.89	33.93	278	26.97	112.0	4.79	5.42	1470.
290	3.88	33.94	285	26.98	110.9	4.90	5.74	1470.
300	3.87	33.96	298	26.99	109.7	5.01	6.07	1470.





## OFFSHORE OCEANOGRAPHY GROUP

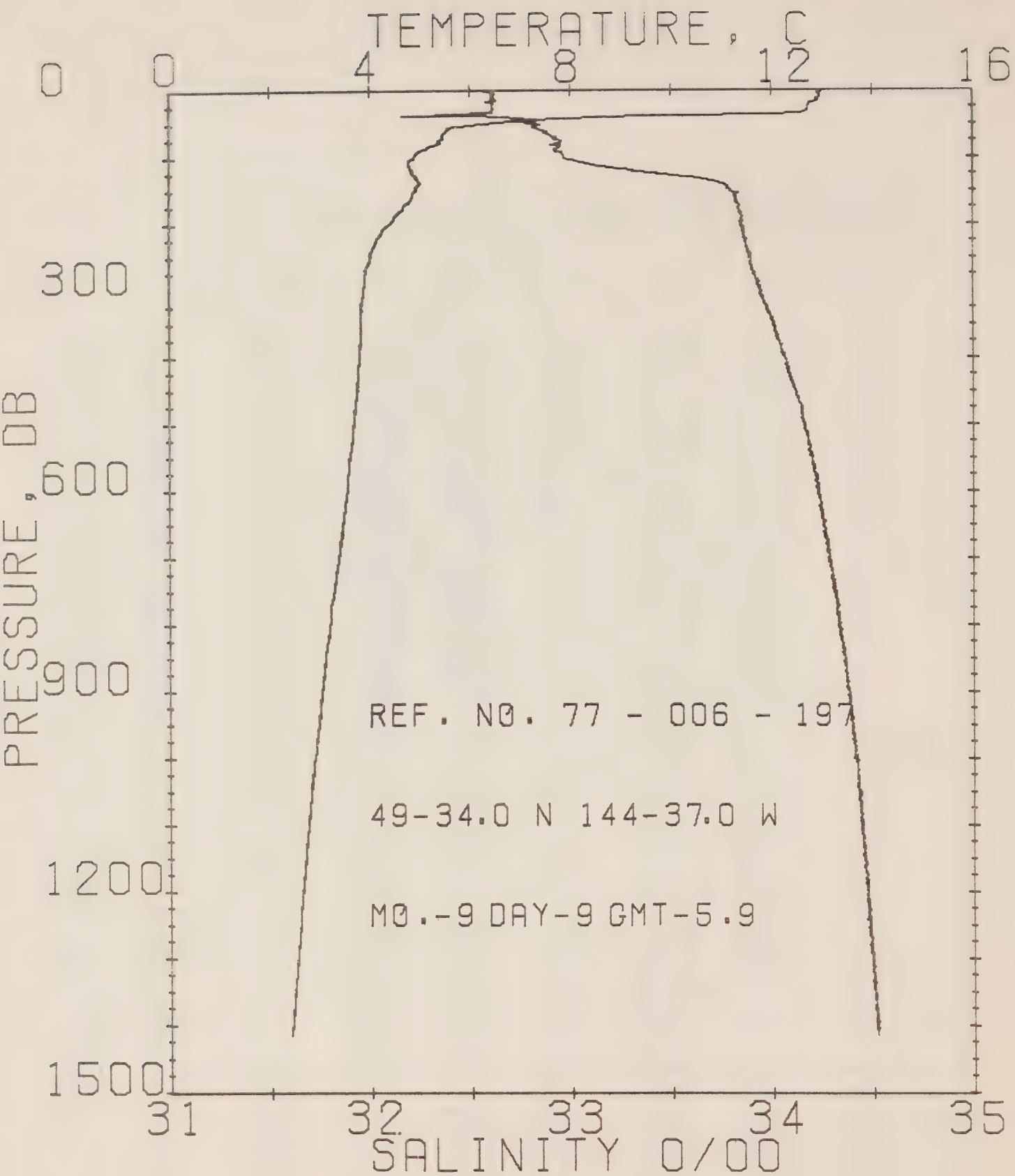
REFERENCE NO. 77- 8-197

DATE 9/ 9/77

POSITION 49-34.0N, 144-37.0W

GMT 5.9

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.98	32.59	0	24.55	339.2	.00	.00	1498.
5	12.96	32.61	5	24.57	337.5	.17	.00	1498.
10	12.96	32.62	10	24.58	336.7	.34	.02	1498.
15	12.91	32.63	15	24.60	334.9	.51	.04	1498.
20	12.74	32.62	20	24.62	333.1	.67	.07	1497.
25	12.72	32.61	25	24.62	333.3	.84	.11	1497.
30	12.70	32.61	30	24.63	332.8	1.01	.15	1497.
35	12.14	32.57	35	24.70	326.3	1.17	.21	1495.
40	8.50	32.67	40	25.39	260.0	1.32	.27	1482.
45	8.92	32.62	45	25.74	226.9	1.44	.32	1477.
50	8.15	32.61	50	25.83	218.8	1.55	.37	1474.
55	5.59	32.62	55	25.90	211.5	1.66	.40	1471.
60	5.53	32.67	60	25.95	207.0	1.77	.49	1471.
65	5.43	32.69	65	25.97	204.6	1.87	.50	1471.
70	5.46	32.93	70	26.01	201.6	1.97	.60	1471.
75	5.56	32.96	75	26.04	198.6	2.07	.70	1471.
80	5.54	32.95	80	26.03	199.2	2.17	.70	1471.
90	5.00	32.92	89	26.06	197.2	2.37	.90	1470.
100	4.88	32.97	99	26.10	192.7	2.56	1.14	1469.
110	4.78	33.09	109	26.21	182.6	2.75	1.34	1469.
120	4.34	33.31	119	26.38	167.0	2.93	1.54	1470.
130	4.93	33.59	129	26.59	146.8	3.08	1.75	1471.
140	4.90	33.70	139	26.72	134.9	3.20	1.94	1471.
150	4.88	33.60	149	26.70	131.0	3.36	2.10	1471.
160	4.84	33.52	159	26.76	128.8	3.49	2.34	1471.
170	4.70	33.33	169	26.80	127.0	3.61	2.55	1471.
180	4.60	33.64	179	26.83	124.9	3.74	2.78	1471.
190	4.48	33.66	189	26.85	122.8	3.86	3.01	1470.
200	4.56	33.66	199	26.86	121.6	3.99	3.20	1470.
210	4.25	33.80	209	26.88	120.0	4.11	3.51	1470.
220	4.14	33.80	218	26.89	118.8	4.23	3.77	1470.
230	4.10	33.57	228	26.90	118.0	4.35	4.04	1469.
240	4.03	33.88	238	26.92	116.5	4.46	4.32	1469.
250	3.99	33.90	248	26.94	114.8	4.58	4.61	1469.
260	3.90	33.90	258	26.94	114.9	4.69	4.91	1469.
270	3.92	33.91	268	26.95	113.8	4.81	5.22	1469.
280	3.53	33.92	278	26.96	112.5	4.92	5.54	1469.
290	3.68	33.93	288	26.97	111.6	5.03	5.85	1470.
300	3.57	33.94	298	26.98	111.1	5.14	6.20	1470.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8-197

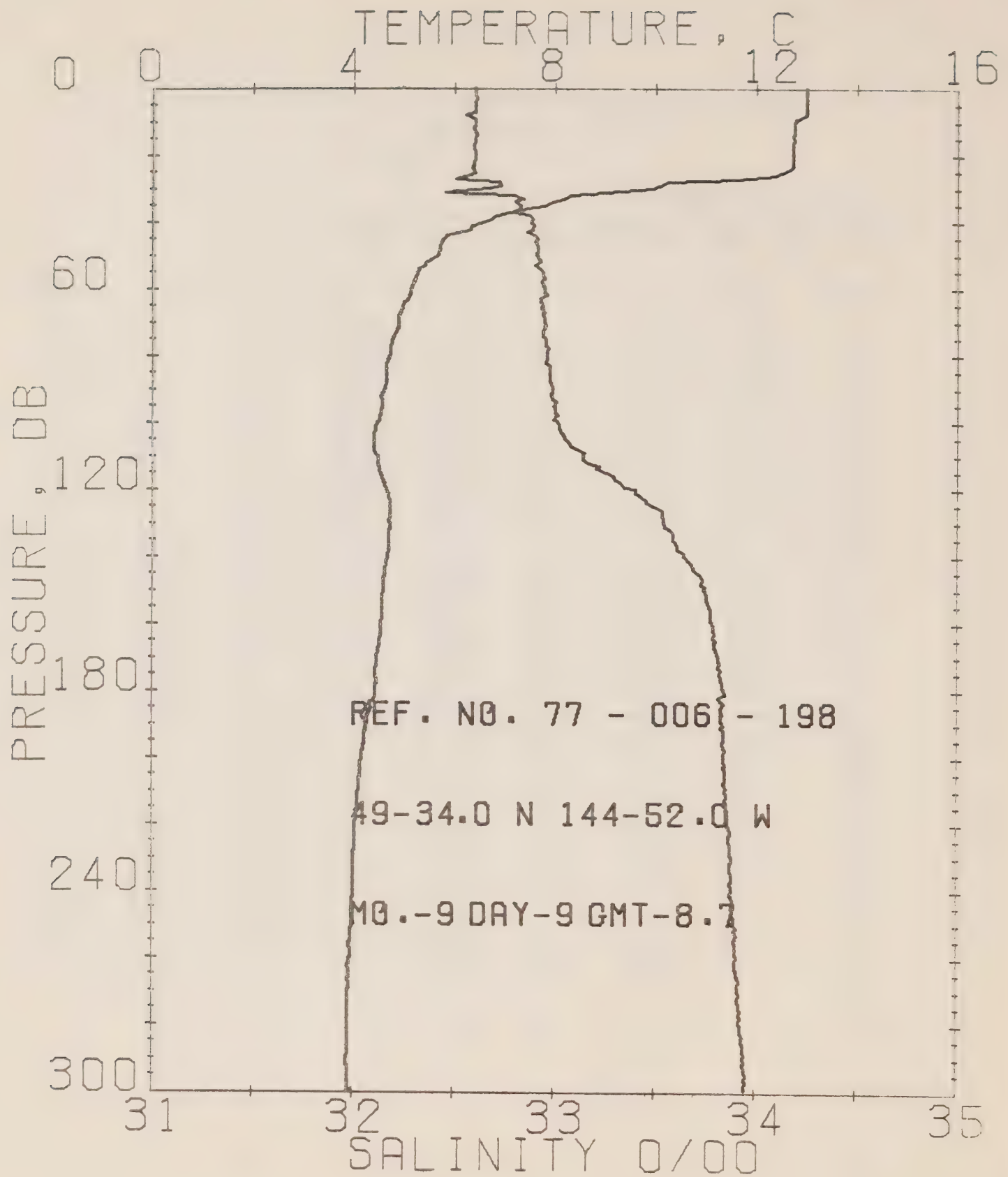
DATE 9/ 9/77

POSITION 49-34.0N, 144-37.0W

GMT 5.9

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.98	32.59	0	24.55	339.2	.00	8.00	1498.
50	6.15	32.61	50	25.83	218.8	1.55	8.37	1474.
100	4.68	32.97	99	26.10	192.7	2.56	11.14	1469.
150	4.68	33.00	149	26.76	131.0	3.36	21.13	1471.
200	4.36	33.00	199	26.86	121.6	3.99	31.26	1470.
250	3.99	33.90	243	26.94	114.8	4.58	41.61	1469.
300	3.67	33.94	296	26.98	111.1	5.14	51.20	1470.
350	3.61	34.01	347	27.04	105.5	5.69	61.99	1470.
400	3.78	34.06	397	27.09	101.7	6.20	71.97	1471.
450	3.74	34.12	446	27.15	97.7	6.70	82.13	1472.
500	3.66	34.16	496	27.18	93.9	7.18	92.45	1472.
550	3.58	34.20	545	27.22	90.4	7.64	102.92	1473.
600	3.54	34.25	595	27.24	88.5	8.09	113.54	1474.
650	3.45	34.26	644	27.28	85.3	8.53	124.31	1474.
700	3.37	34.28	694	27.30	83.5	8.95	135.21	1475.
750	3.26	34.32	743	27.34	79.8	9.36	146.23	1475.
800	3.18	34.33	793	27.36	78.3	9.75	157.35	1475.
850	3.09	34.36	842	27.39	75.5	10.14	168.59	1475.
900	3.02	34.38	892	27.41	73.8	10.51	179.92	1477.
950	2.95	34.40	941	27.45	71.6	10.87	191.35	1477.
1000	2.87	34.41	990	27.45	70.6	11.23	202.89	1478.
1050	2.80	34.45	1040	27.47	68.3	11.59	214.51	1478.
1100	2.74	34.44	1089	27.48	67.5	11.92	226.23	1479.
1150	2.69	34.45	1138	27.50	66.0	12.25	238.04	1479.
1200	2.62	34.47	1186	27.52	64.4	12.57	249.94	1480.
1250	2.58	34.49	1237	27.53	63.1	12.89	261.92	1481.
1300	2.52	34.50	1285	27.55	61.9	13.21	273.99	1481.
1350	2.46	34.50	1335	27.56	61.0	13.51	286.14	1482.
1400	2.41	34.52	1385	27.58	59.4	13.81	298.36	1482.





## OFFSHORE OCEANOGRAPHY GROUP

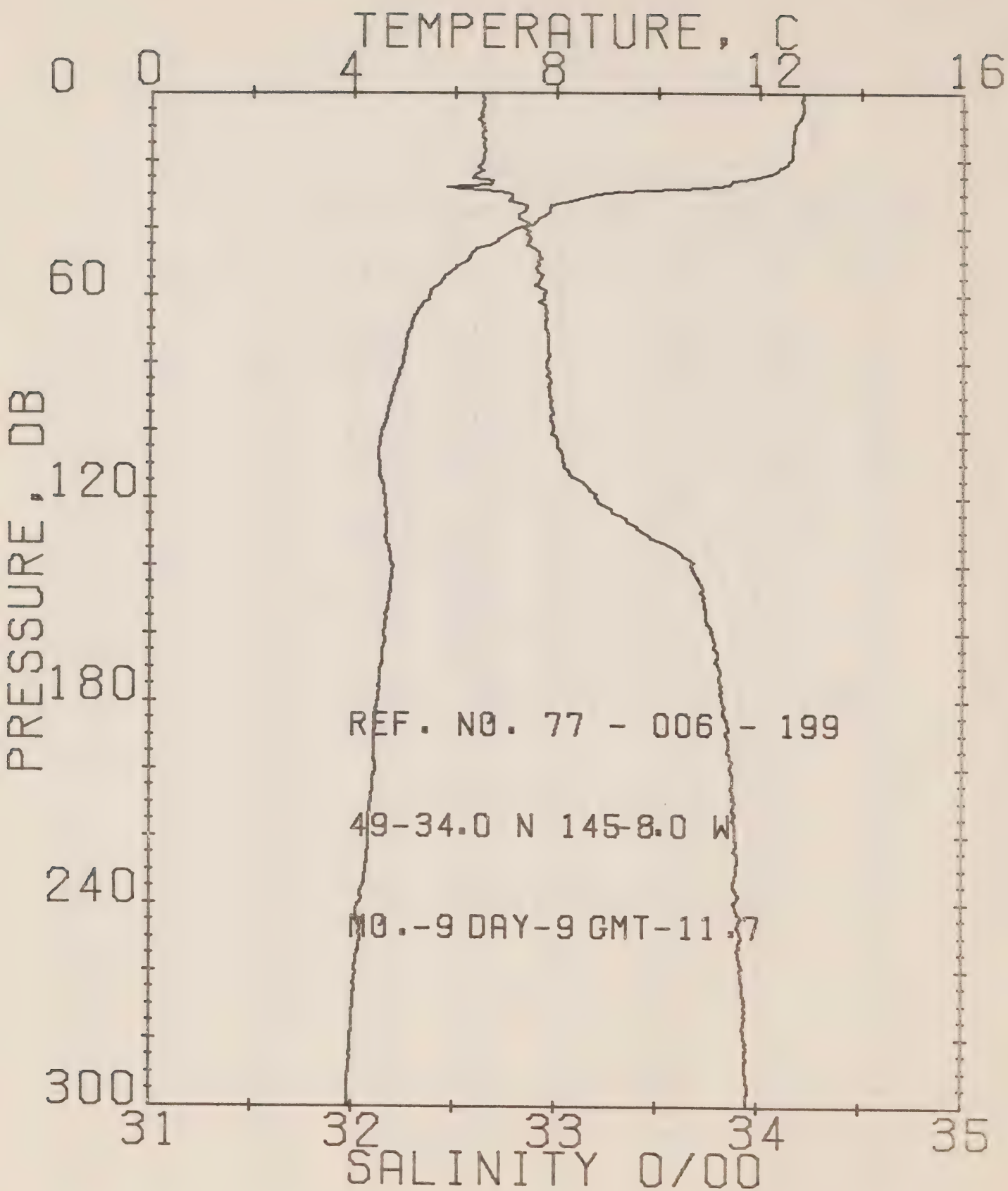
REFERENCE NO. 77- 8-198

DATE 9/ 9/77

POSITION 49-34.0N, 144-52.0W

GMT 8.7

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA J	POT. EN	SOUND
0	13.00	32.60	0	24.56	338.7	.00	.00	1498.
5	12.99	32.60	5	24.56	338.5	.17	.00	1498.
10	12.76	32.60	10	24.61	334.3	.34	.02	1497.
15	12.74	32.60	15	24.61	334.3	.51	.04	1497.
20	12.72	32.60	20	24.61	334.1	.67	.07	1497.
25	12.49	32.60	25	24.66	329.9	.84	.11	1497.
30	9.95	32.68	30	25.17	280.8	.99	.15	1488.
35	7.78	32.82	35	25.62	238.3	1.12	.19	1480.
40	6.53	32.88	40	25.84	217.4	1.23	.23	1475.
45	5.75	32.91	45	25.96	206.2	1.34	.28	1472.
50	5.64	32.91	50	25.97	205.2	1.44	.33	1472.
55	5.26	32.93	55	26.03	198.9	1.54	.36	1470.
60	5.13	32.95	60	26.06	196.7	1.64	.44	1470.
65	4.96	32.94	65	26.07	195.3	1.74	.51	1469.
70	4.87	32.95	70	26.09	194.1	1.84	.57	1469.
75	4.75	32.95	75	26.10	192.5	1.93	.64	1468.
80	4.70	32.96	80	26.12	191.3	2.03	.72	1468.
90	4.61	32.99	89	26.15	188.5	2.22	.86	1466.
100	4.46	33.01	99	26.18	185.0	2.41	1.00	1466.
110	4.46	33.14	109	26.26	175.5	2.59	1.20	1468.
120	4.65	33.39	119	26.46	158.9	2.76	1.46	1469.
130	4.71	33.54	129	26.57	148.5	2.91	1.65	1470.
140	4.66	33.64	139	26.66	140.4	3.05	1.85	1470.
150	4.58	33.74	149	26.75	132.0	3.19	2.05	1470.
160	4.54	33.78	159	26.79	128.4	3.32	2.25	1470.
170	4.46	33.81	169	26.82	125.8	3.45	2.47	1470.
180	4.43	33.84	179	26.84	123.2	3.57	2.69	1470.
190	4.25	33.84	189	26.86	121.8	3.69	2.92	1469.
200	4.15	33.84	199	26.87	120.7	3.81	3.16	1469.
210	4.09	33.85	209	26.88	119.4	3.93	3.41	1469.
220	4.02	33.86	218	26.90	117.9	4.05	3.67	1469.
230	4.00	33.88	228	26.92	116.5	4.17	3.94	1469.
240	3.99	33.88	238	26.92	116.5	4.29	4.22	1469.
250	3.96	33.89	243	26.93	115.5	4.40	4.51	1469.
260	3.92	33.90	253	26.94	114.0	4.52	4.81	1469.
270	3.90	33.91	266	26.96	113.1	4.63	5.12	1469.
280	3.89	33.93	276	26.97	112.0	4.74	5.43	1469.
290	3.87	33.94	286	26.98	110.9	4.85	5.75	1470.
300	3.89	33.96	296	26.99	110.1	4.97	6.09	1470.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 17- 6-199

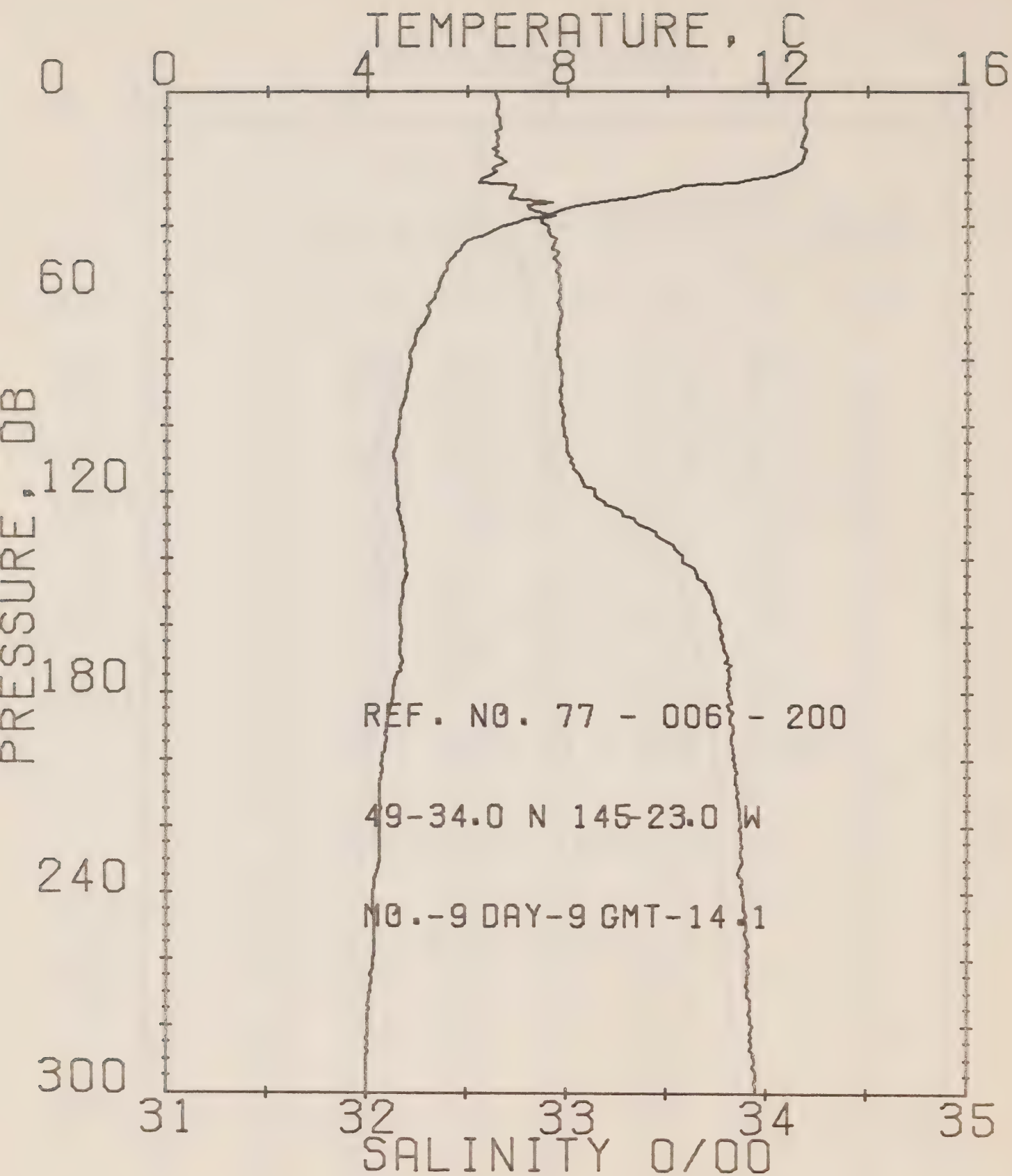
DATE 9/ 9/77

POSITION 49-34.0N, 145- 8.0W

SMT 11.7

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.84	32.63	0	24.62	333.3	.00	.00	1497.
5	12.85	32.63	5	24.61	333.6	.17	.00	1497.
10	12.69	32.64	10	24.65	330.5	.33	.02	1497.
15	12.65	32.64	15	24.66	329.5	.50	.04	1497.
20	12.60	32.64	20	24.67	328.9	.66	.07	1497.
25	11.65	32.69	25	24.77	319.0	.83	.10	1494.
30	8.65	32.77	30	25.42	257.1	.97	.15	1484.
35	7.66	32.64	35	25.52	237.7	1.10	.19	1480.
40	7.20	32.64	40	25.71	229.5	1.21	.23	1478.
45	6.66	32.66	45	25.80	221.1	1.33	.26	1476.
50	6.22	32.91	50	25.90	211.8	1.43	.30	1474.
55	5.77	32.92	55	25.96	205.5	1.54	.35	1472.
60	5.50	32.94	60	26.01	200.9	1.64	.40	1471.
65	5.26	32.95	65	26.05	197.5	1.74	.51	1470.
70	5.12	32.95	70	26.06	196.7	1.84	.56	1470.
75	5.03	32.96	75	26.08	194.7	1.93	.60	1470.
80	4.98	32.95	80	26.08	194.5	2.03	.70	1469.
90	4.76	32.97	89	26.12	191.2	2.20	.89	1469.
100	4.57	32.99	99	26.15	188.1	2.41	1.00	1468.
110	4.54	33.04	109	26.20	183.8	2.60	1.20	1468.
120	4.65	33.20	119	26.31	173.2	2.78	1.49	1469.
130	4.66	33.42	129	26.49	156.6	2.94	1.70	1470.
140	4.79	33.67	139	26.66	139.8	3.09	1.90	1471.
150	4.71	33.73	149	26.72	134.3	3.23	2.10	1471.
160	4.62	33.77	159	26.77	130.5	3.36	2.31	1470.
170	4.55	33.61	169	26.80	127.0	3.49	2.50	1470.
180	4.49	33.62	179	26.82	125.3	3.61	2.75	1470.
190	4.43	33.54	189	26.84	123.4	3.74	2.96	1470.
200	4.45	33.66	199	26.86	122.1	3.86	3.20	1470.
210	4.36	33.68	209	26.86	119.6	3.98	3.40	1470.
220	4.32	33.69	218	26.89	119.1	4.10	3.74	1470.
230	4.26	33.69	228	26.90	118.1	4.22	4.01	1470.
240	4.10	33.88	238	26.91	117.3	4.34	4.29	1470.
250	4.15	33.92	246	26.93	115.2	4.45	4.50	1470.
260	4.07	33.91	256	26.94	114.6	4.57	4.86	1470.
270	4.02	33.94	268	26.96	112.5	4.68	5.19	1470.
280	3.98	33.93	278	26.96	112.6	4.79	5.50	1470.
290	3.93	33.94	288	26.97	111.6	4.90	5.80	1470.
300	3.92	33.95	298	26.99	110.5	5.00	6.10	1470.





## OFFSHORE OCEANOGRAPHY GROUP

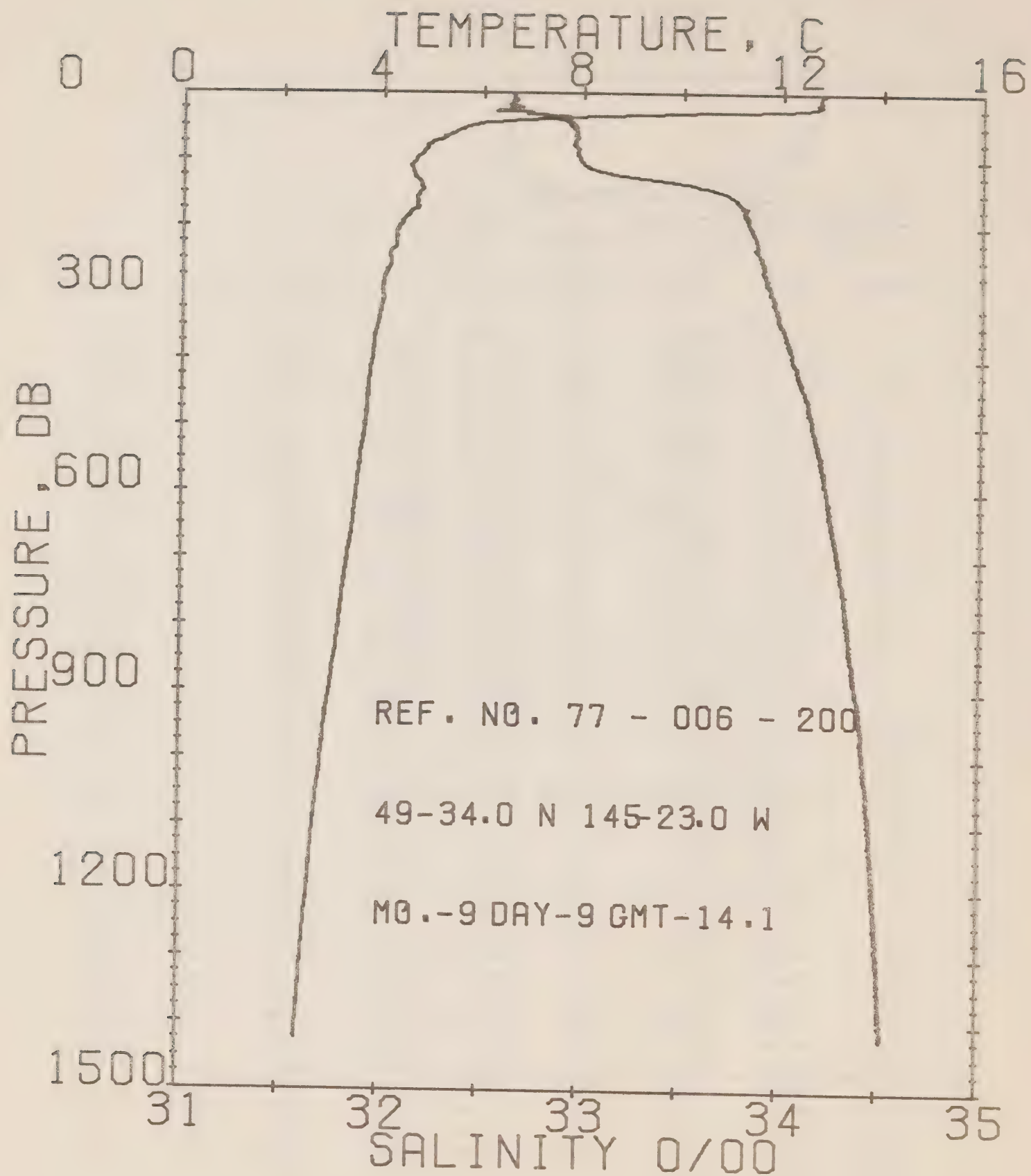
REFERENCE NO. 77- 8-200

DATE 9/ 9/77

POSITION 49-34.0N, 145-23.0W

GMT 14.1

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA S	POT. EN	SOUND
0	12.83	32.84	0	24.82	332.7	.00	.00	1497.
5	12.74	32.85	5	24.85	330.1	.17	.00	1497.
10	12.73	32.88	10	24.86	329.5	.33	.02	1497.
15	12.71	32.85	15	24.85	330.2	.50	.04	1497.
20	12.72	32.87	20	24.86	329.1	.66	.07	1497.
25	12.11	32.81	25	24.74	321.8	.82	.10	1495.
30	9.78	32.73	30	25.24	274.7	.97	.15	1487.
35	7.99	32.81	35	25.58	241.8	1.10	.19	1481.
40	6.73	32.90	40	25.83	218.7	1.22	.23	1475.
45	5.95	32.94	45	25.96	206.3	1.32	.28	1473.
50	5.89	32.93	50	25.98	203.8	1.42	.33	1472.
55	5.49	32.96	55	26.03	199.2	1.53	.38	1471.
60	5.37	32.96	60	26.04	198.3	1.62	.44	1471.
65	5.25	32.97	65	26.06	196.4	1.72	.50	1470.
70	5.11	32.96	70	26.07	195.2	1.82	.57	1470.
75	4.95	32.95	75	26.09	194.2	1.92	.64	1469.
80	4.87	32.97	80	26.10	192.6	2.02	.72	1469.
90	4.78	32.97	89	26.11	191.6	2.21	.88	1469.
100	4.65	32.98	99	26.14	189.1	2.40	1.07	1468.
110	4.56	33.03	109	26.18	185.0	2.58	1.27	1468.
120	4.62	33.14	119	26.27	177.0	2.77	1.48	1469.
130	4.71	33.36	129	26.44	161.4	2.94	1.70	1470.
140	4.76	33.58	139	26.60	146.2	3.09	1.91	1470.
150	4.72	33.72	149	26.71	135.4	3.23	2.12	1471.
160	4.68	33.77	159	26.76	131.3	3.36	2.33	1471.
170	4.72	33.81	169	26.79	128.7	3.40	2.55	1471.
180	4.53	33.81	179	26.81	126.5	3.62	2.77	1470.
190	4.39	33.83	189	26.84	123.7	3.75	3.01	1470.
200	4.31	33.84	199	26.85	122.6	3.87	3.25	1470.
210	4.27	33.86	209	26.87	120.4	3.90	3.51	1470.
220	4.26	33.87	218	26.89	119.4	4.11	3.77	1470.
230	4.25	33.88	225	26.89	119.1	4.23	4.05	1470.
240	4.14	33.88	238	26.90	117.9	4.35	4.33	1470.
250	4.15	33.90	248	26.92	116.7	4.47	4.62	1470.
260	4.14	33.91	258	26.93	115.9	4.58	4.92	1470.
270	4.06	33.91	268	26.94	115.1	4.70	5.24	1470.
280	4.02	33.93	278	26.95	113.3	4.81	5.56	1470.
290	4.01	33.94	288	26.96	112.4	4.97	5.89	1470.
300	4.01	33.94	298	26.97	112.3	5.04	6.22	1470.



## OFFSHORE OCEANOGRAPHY GROUP

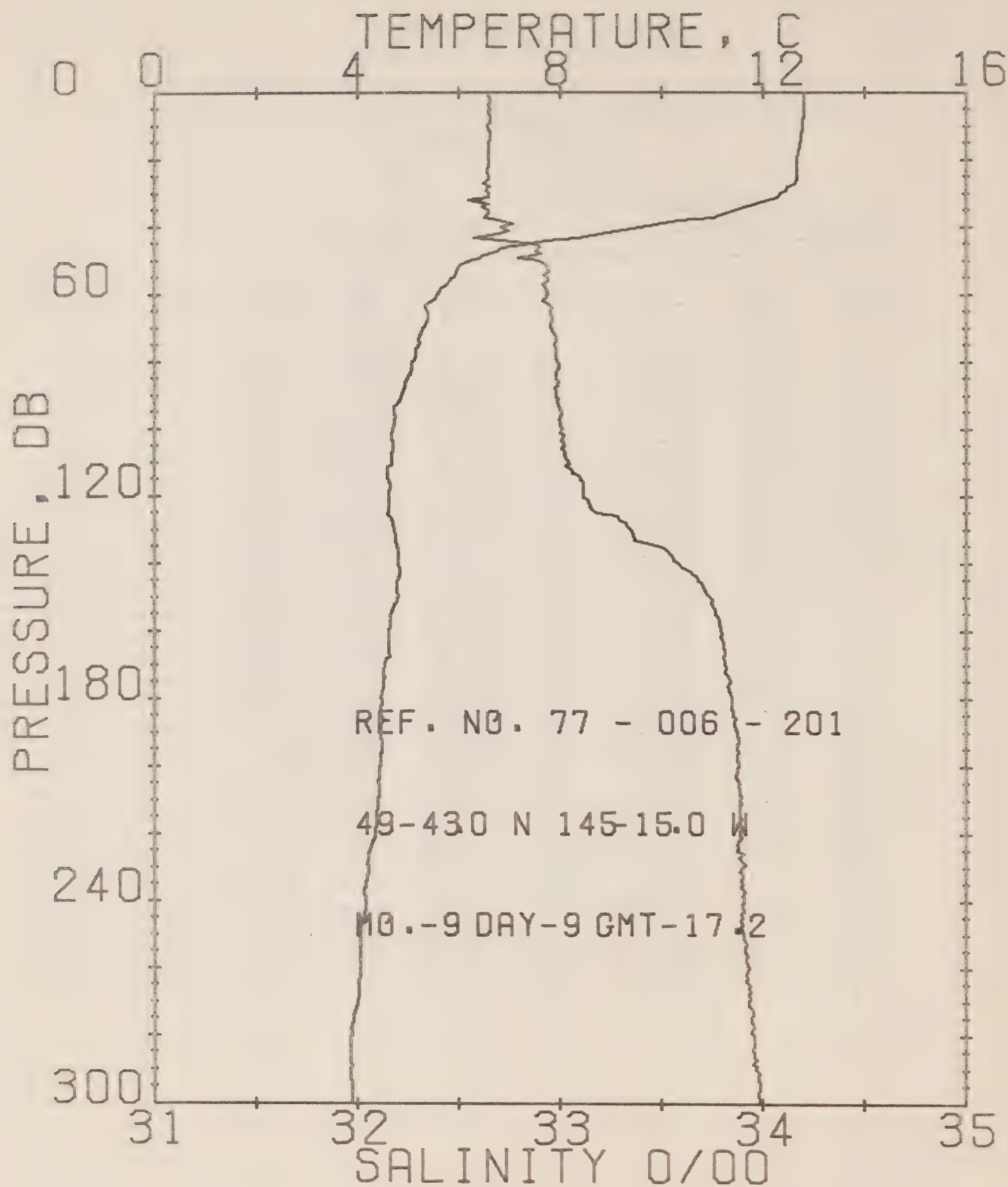
REFERENCE NO. 77- 8-200

DATE 9/ 9/77

POSITION 49-34.0N, 145-23.0W GMT 14.1

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA S	POT. EN	SOUND
0	12.83	32.84	0	24.82	332.7	.00	.00	1497.
50	5.89	32.93	50	25.98	203.8	1.42	.33	1472.
100	4.85	32.98	99	26.14	189.1	2.40	1.07	1468.
150	4.72	33.72	149	26.71	135.4	3.23	2.12	1471.
200	4.31	33.84	199	26.85	122.6	3.87	3.25	1470.
250	4.15	33.90	248	26.92	116.7	4.47	4.82	1470.
300	4.01	33.94	298	26.97	112.3	5.04	6.22	1470.
350	3.90	34.01	347	27.03	106.8	5.59	8.04	1471.
400	3.80	34.05	397	27.07	102.9	6.11	10.04	1471.
450	3.72	34.12	446	27.14	97.3	6.61	12.20	1472.
500	3.67	34.16	496	27.17	94.4	7.09	14.31	1472.
550	3.56	34.20	545	27.22	90.1	7.55	16.96	1473.
600	3.49	34.23	595	27.24	88.0	7.99	19.60	1473.
650	3.43	34.26	644	27.28	85.4	8.43	22.36	1474.
700	3.32	34.29	694	27.31	82.2	8.85	25.24	1474.
750	3.24	34.31	743	27.34	80.0	9.25	28.25	1475.
800	3.16	34.34	793	27.37	77.4	9.64	31.33	1476.
850	3.08	34.38	842	27.39	75.4	10.03	34.53	1476.
900	2.99	34.39	892	27.42	72.9	10.40	37.86	1476.
950	2.89	34.41	941	27.45	70.3	10.76	41.24	1477.
1000	2.83	34.42	990	27.46	68.9	11.10	44.70	1477.
1050	2.75	34.44	1040	27.48	67.3	11.44	48.20	1478.
1100	2.69	34.45	1089	27.50	65.7	11.78	51.89	1479.
1150	2.63	34.47	1138	27.52	64.0	12.10	55.61	1479.
1200	2.58	34.49	1188	27.54	62.6	12.42	59.40	1480.
1250	2.53	34.50	1237	27.55	61.6	12.73	63.33	1480.
1300	2.47	34.50	1286	27.56	60.9	13.04	67.31	1481.
1350	2.43	34.51	1336	27.57	59.8	13.34	71.36	1482.
1400	2.38	34.51	1385	27.57	59.6	13.64	75.54	1482.





## OFFSHORE OCEANOGRAPHY GROUP

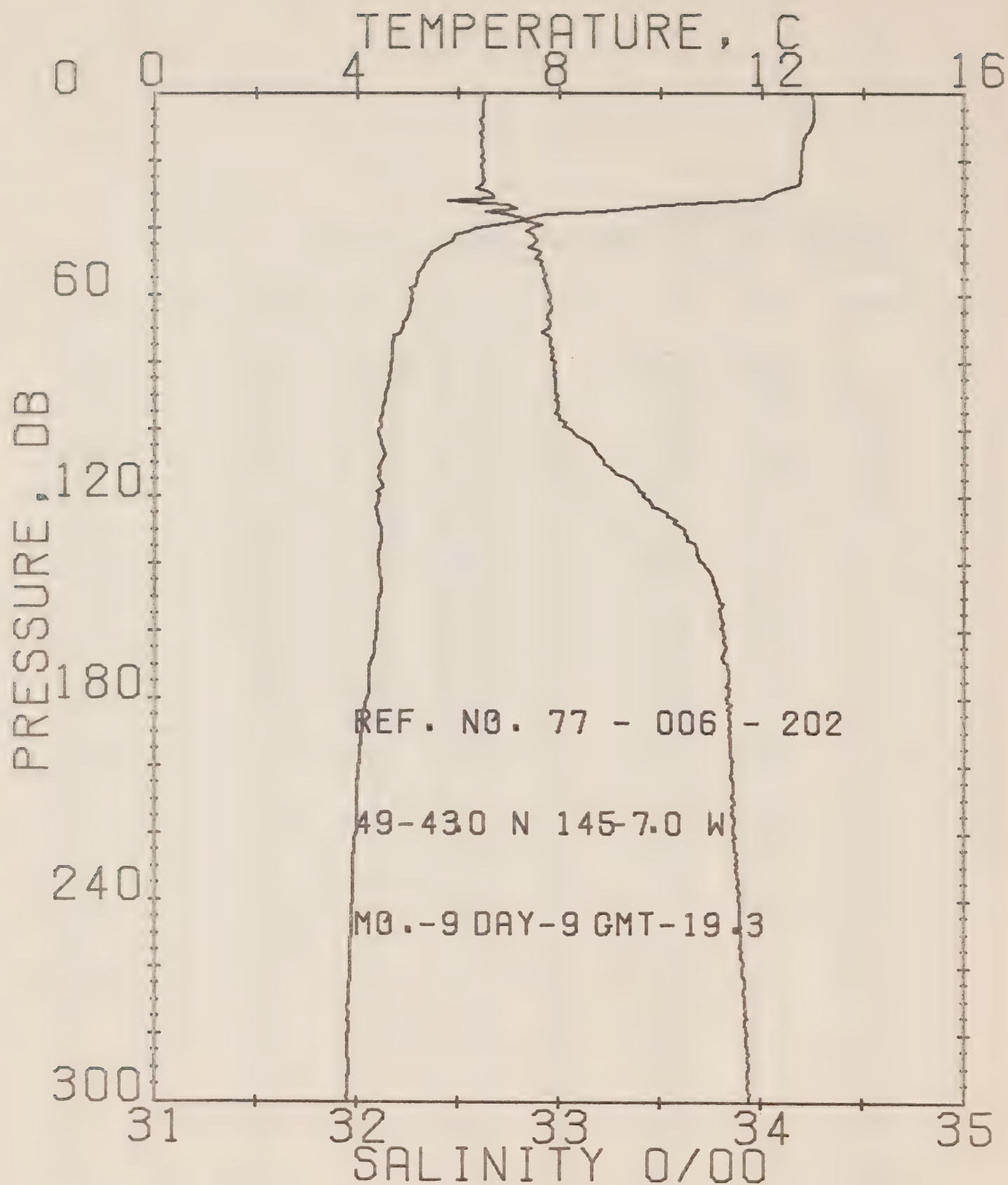
REFERENCE NO. 77- 6-201

DATE 9/ 9/77

POSITION 49-43.0N, 145-15.0W

GMT 17.2

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.61	32.65	0	24.63	331.7	.00	.00	1497.
5	12.79	32.65	5	24.64	331.0	.17	.00	1497.
10	12.78	32.64	10	24.63	331.8	.33	.02	1497.
15	12.72	32.65	15	24.65	330.4	.50	.04	1497.
20	12.68	32.65	20	24.66	329.8	.66	.07	1497.
25	12.67	32.65	25	24.66	329.6	.83	.11	1497.
30	12.36	32.64	30	24.72	324.3	.99	.15	1496.
35	11.46	32.64	35	24.88	309.0	1.15	.20	1493.
40	9.58	32.71	40	25.26	272.8	1.30	.26	1487.
45	7.29	32.87	45	25.75	228.0	1.42	.32	1478.
50	6.20	32.89	50	25.89	212.8	1.53	.37	1474.
55	5.85	32.94	55	25.96	205.5	1.64	.42	1473.
60	5.57	32.94	60	26.00	202.2	1.74	.46	1472.
65	5.57	32.95	65	26.04	198.9	1.84	.50	1471.
70	5.29	32.95	70	26.05	197.9	1.94	.62	1471.
75	5.20	32.97	75	26.07	195.5	2.04	.69	1470.
80	5.08	32.98	80	26.09	193.5	2.14	.77	1470.
90	4.86	32.98	89	26.12	191.4	2.33	.90	1469.
100	4.69	33.01	99	26.16	187.5	2.52	1.12	1469.
110	4.67	33.04	109	26.18	185.0	2.70	1.32	1469.
120	4.62	33.11	119	26.25	179.3	2.80	1.50	1469.
130	4.73	33.34	129	26.42	163.2	3.06	1.70	1470.
140	4.61	33.58	139	26.60	146.4	3.21	1.90	1471.
150	4.79	33.74	149	26.72	134.2	3.35	2.10	1471.
160	4.62	33.79	159	26.78	128.7	3.48	2.37	1470.
170	4.52	33.81	169	26.81	126.2	3.61	2.59	1470.
180	4.47	33.84	179	26.84	123.5	3.73	2.81	1470.
190	4.40	33.87	189	26.86	121.5	3.86	3.04	1470.
200	4.44	33.88	199	26.87	120.7	3.98	3.20	1470.
210	4.41	33.89	209	26.86	120.0	4.10	3.50	1470.
220	4.54	33.89	218	26.89	119.2	4.22	3.79	1470.
230	4.23	33.90	228	26.91	117.1	4.34	4.00	1470.
240	4.16	33.91	238	26.92	116.0	4.45	4.34	1470.
250	4.06	33.91	246	26.95	115.2	4.57	4.60	1470.
260	4.05	33.95	256	26.95	113.3	4.60	4.90	1470.
270	4.01	33.95	263	26.96	112.9	4.80	5.24	1470.
280	3.87	33.96	276	26.99	109.6	4.91	5.55	1469.
290	3.67	33.97	285	27.00	108.7	5.02	5.86	1470.
300	3.90	33.99	298	27.02	107.8	5.12	6.19	1470.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8-202

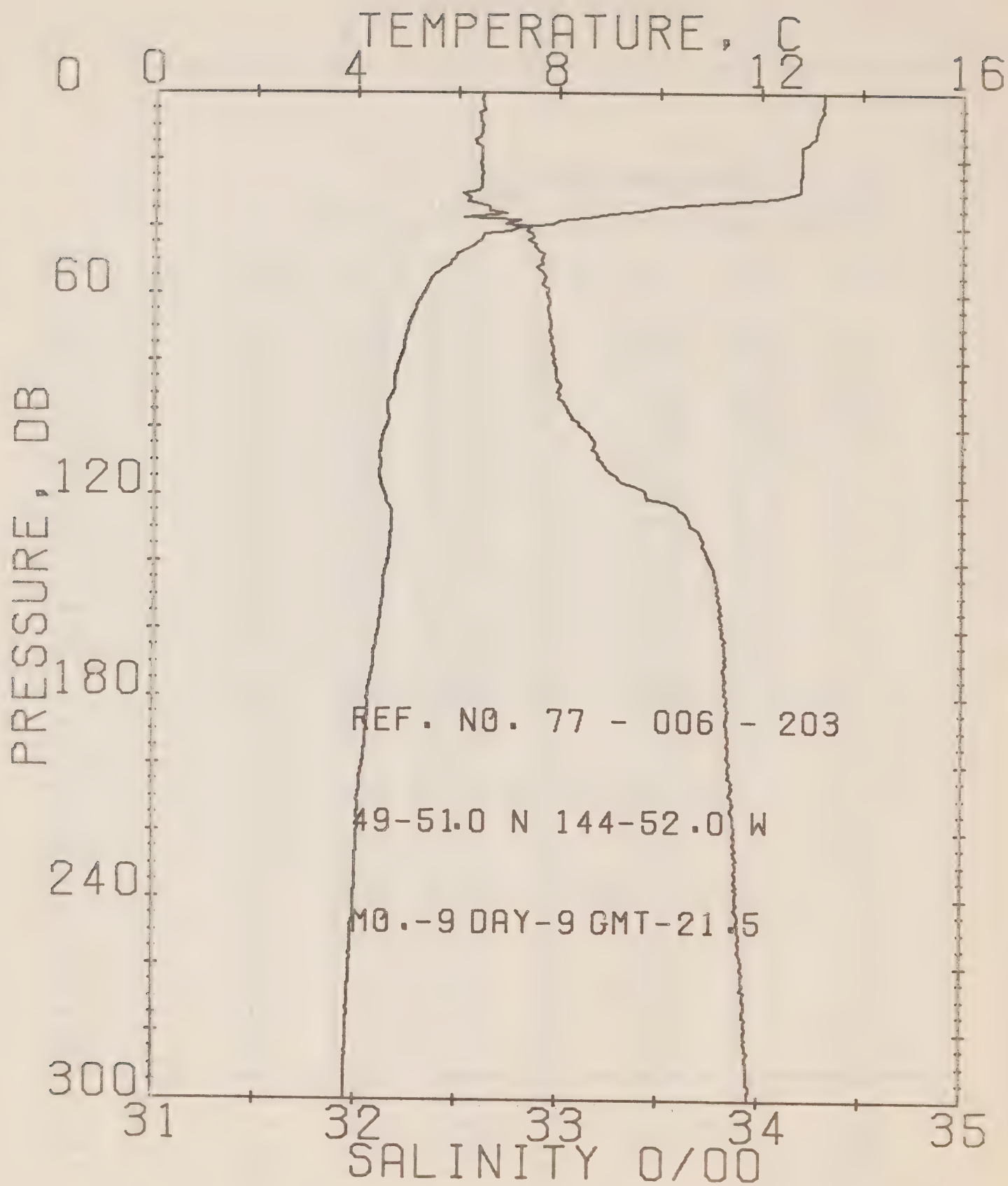
DATE 9/ 9/77

POSITION 49-43.0N, 145- 7.0W

GMT 19.3

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	13.00	32.63	0	24.58	336.7	.00	.00	1498.
5	13.01	32.62	5	24.57	337.7	.17	.00	1498.
10	12.97	32.62	10	24.58	337.2	.34	.02	1498.
15	12.80	32.61	15	24.61	334.3	.51	.04	1497.
20	12.77	32.62	20	24.62	333.2	.67	.07	1497.
25	12.75	32.62	25	24.62	333.0	.84	.11	1497.
30	12.14	32.66	30	24.77	319.1	1.00	.15	1490.
35	8.83	32.65	35	25.33	266.1	1.15	.20	1484.
40	6.38	32.67	40	25.85	216.6	1.27	.25	1474.
45	5.70	32.87	45	25.93	208.8	1.37	.29	1472.
50	5.33	32.91	50	26.00	201.9	1.48	.34	1470.
55	5.18	32.92	55	26.03	199.1	1.58	.40	1470.
60	5.08	32.95	60	26.07	195.5	1.68	.45	1470.
65	5.02	32.96	65	26.08	194.8	1.77	.52	1469.
70	4.89	32.95	70	26.09	193.9	1.87	.58	1469.
75	4.68	32.95	75	26.11	191.4	1.97	.65	1468.
80	4.67	32.98	80	26.13	189.7	2.06	.73	1468.
90	4.56	32.99	89	26.16	187.4	2.25	.89	1468.
100	4.44	33.05	99	26.21	182.2	2.44	1.07	1468.
110	4.47	33.22	109	26.35	169.7	2.61	1.26	1468.
120	4.44	33.42	119	26.51	154.6	2.77	1.45	1469.
130	4.46	33.52	129	26.66	140.0	2.92	1.64	1469.
140	4.43	33.71	139	26.74	132.9	3.06	1.82	1469.
150	4.45	33.79	149	26.80	127.0	3.19	2.01	1469.
160	4.59	33.61	159	26.82	124.8	3.31	2.21	1469.
170	4.24	33.83	169	26.85	122.0	3.44	2.42	1469.
180	4.19	33.83	179	26.86	121.5	3.56	2.64	1469.
190	4.08	33.85	189	26.88	119.4	3.68	2.80	1469.
200	4.04	33.65	199	26.89	118.4	3.80	3.10	1469.
210	4.00	33.66	209	26.90	117.7	3.91	3.35	1469.
220	3.97	33.66	216	26.91	117.4	4.03	3.61	1469.
230	3.92	33.68	228	26.93	115.6	4.15	3.87	1469.
240	3.91	33.69	238	26.93	114.8	4.26	4.15	1469.
250	3.88	33.90	248	26.95	113.7	4.38	4.43	1469.
260	3.87	33.91	258	26.95	113.2	4.49	4.73	1469.
270	3.83	33.92	268	26.97	111.9	4.60	5.03	1469.
280	3.82	33.93	278	26.98	111.1	4.72	5.35	1469.
290	3.83	33.94	288	26.98	110.7	4.83	5.67	1469.
300	3.81	33.95	298	26.99	109.9	4.94	6.00	1470.





## OFFSHORE OCEANOGRAPHY GROUP

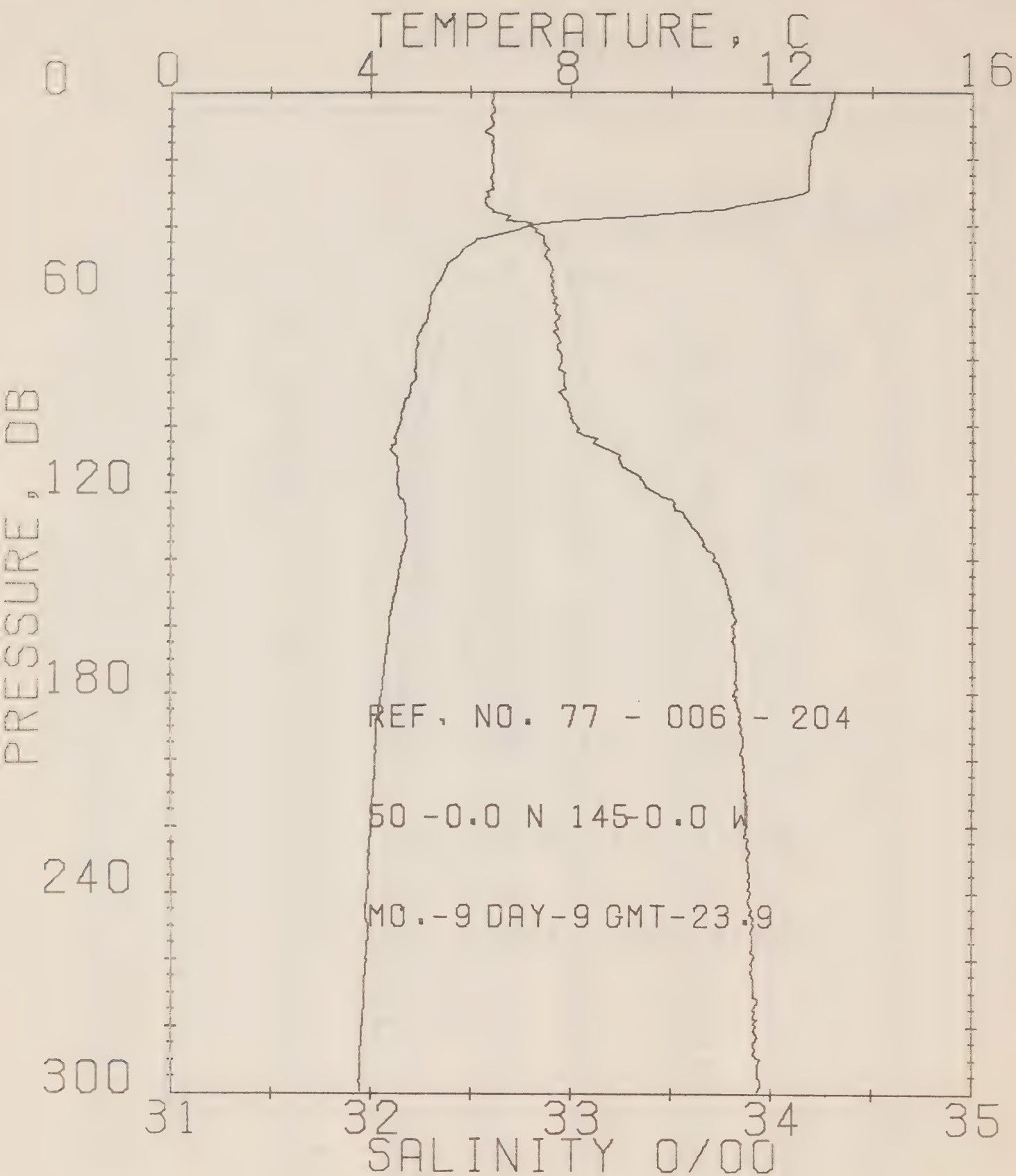
REFERENCE NO. 77- 6-203

DATE 9/ 9/77

POSITION 49-51.0N, 144-52.0W

GMT 21.5

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	13.23	32.62	0	24.53	341.8	.00	.00	1499.
5	13.23	32.62	5	24.53	341.4	.17	.00	1499.
10	13.10	32.62	10	24.55	339.6	.34	.02	1498.
15	12.90	32.59	15	24.57	338.0	.51	.04	1498.
20	12.80	32.61	20	24.61	334.6	.68	.07	1498.
25	12.78	32.62	25	24.61	334.1	.85	.11	1498.
30	12.63	32.53	30	24.57	338.1	1.01	.15	1497.
35	9.64	32.65	35	25.26	277.9	1.17	.21	1487.
40	7.26	32.64	40	25.71	229.6	1.29	.25	1476.
45	6.32	32.69	45	25.87	214.7	1.41	.30	1474.
50	5.68	32.91	50	25.94	207.4	1.51	.35	1473.
55	5.48	32.93	55	26.01	201.3	1.61	.41	1471.
60	5.31	32.94	60	26.03	199.0	1.71	.47	1471.
65	5.15	32.95	65	26.06	196.9	1.81	.53	1470.
70	5.01	32.96	70	26.08	194.2	1.91	.60	1469.
75	4.93	32.97	75	26.10	193.1	2.01	.67	1469.
80	4.84	32.97	80	26.11	191.7	2.10	.74	1469.
90	4.70	33.01	89	26.15	187.7	2.29	.91	1469.
100	4.57	33.12	99	26.26	178.2	2.48	1.09	1468.
110	4.47	33.21	109	26.34	170.0	2.65	1.27	1468.
120	4.38	33.43	119	26.50	154.8	2.81	1.46	1469.
130	4.29	33.66	129	26.69	137.5	2.96	1.65	1470.
140	4.21	33.75	139	26.76	131.2	3.09	1.83	1470.
150	4.13	33.80	149	26.80	127.3	3.22	2.02	1470.
160	4.04	33.82	159	26.83	124.8	3.35	2.22	1470.
170	3.94	33.83	169	26.85	122.9	3.47	2.43	1469.
180	4.22	33.84	179	26.86	121.3	3.59	2.65	1469.
190	4.20	33.84	189	26.87	121.0	3.71	2.88	1469.
200	4.13	33.85	199	26.88	119.4	3.83	3.11	1469.
210	4.04	33.87	209	26.90	117.5	3.95	3.33	1469.
220	4.03	33.88	218	26.91	116.6	4.07	3.62	1469.
230	4.00	33.89	228	26.92	115.8	4.19	3.89	1469.
240	3.98	33.89	238	26.93	115.4	4.30	4.16	1469.
250	3.91	33.90	248	26.94	114.3	4.42	4.45	1469.
260	3.89	33.92	258	26.96	112.3	4.53	4.75	1469.
270	3.86	33.93	268	26.97	111.5	4.64	5.05	1469.
280	3.84	33.94	278	26.98	110.9	4.75	5.36	1469.
290	3.82	33.95	288	26.99	110.1	4.86	5.68	1469.
300	3.82	33.95	295	26.99	109.7	4.97	6.01	1470.



## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6-204

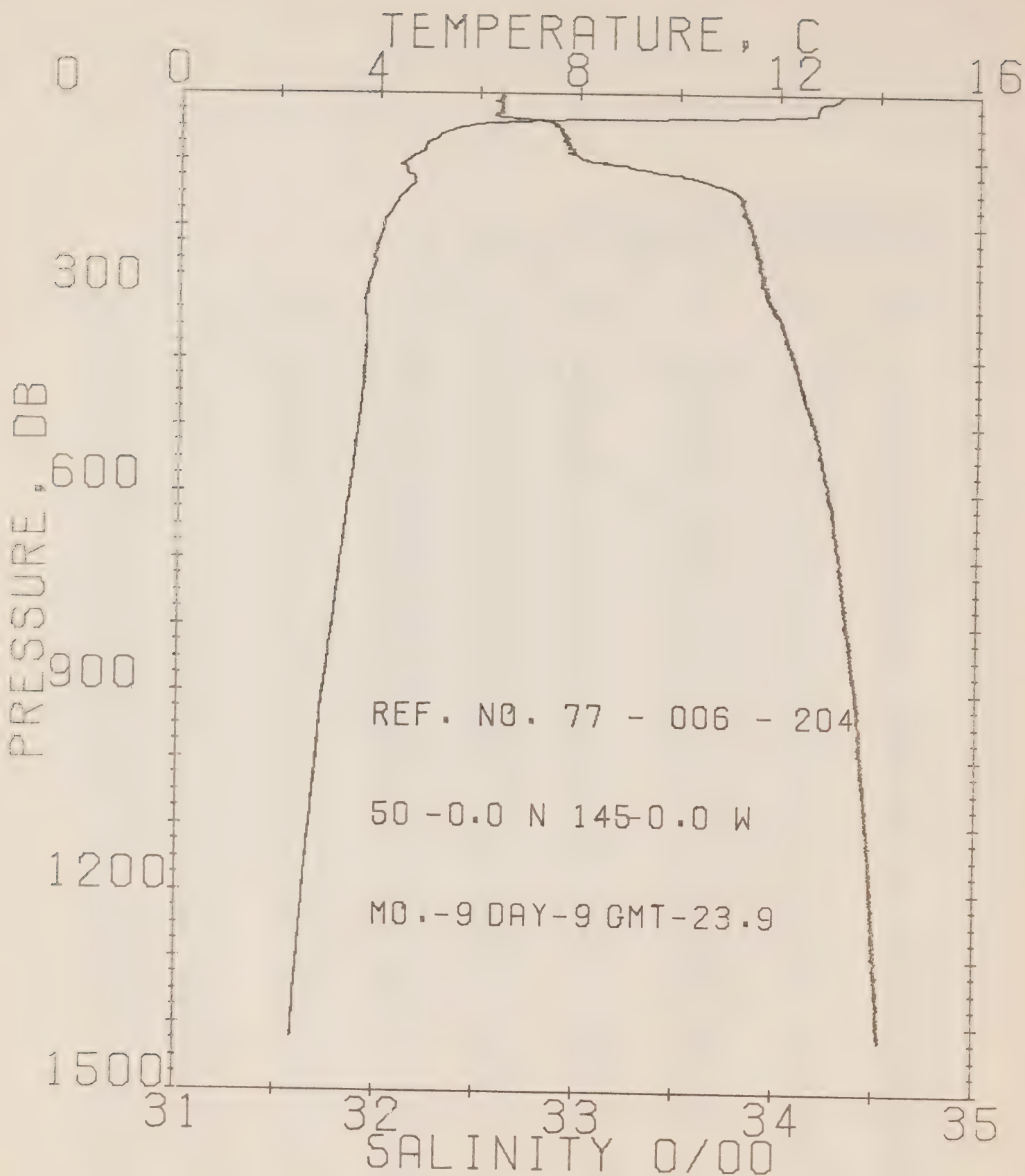
DATE 9/ 9/77

POSITION 50- .0N, 145- .0W

GMT 23.9

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	13.25	32.61	0	24.52	342.2	.00	.00	1499.
5	13.18	32.62	5	24.54	340.7	.17	.00	1499.
10	13.09	32.61	10	24.55	339.7	.34	.02	1498.
15	12.81	32.61	15	24.60	335.1	.51	.04	1497.
20	12.78	32.61	20	24.61	334.5	.68	.07	1497.
25	12.75	32.61	25	24.61	334.1	.84	.11	1497.
30	12.68	32.59	30	24.61	334.4	1.01	.15	1497.
35	11.09	32.60	35	24.92	305.3	1.17	.21	1492.
40	7.16	32.80	40	25.69	232.0	1.30	.26	1477.
45	6.05	32.86	45	25.88	213.0	1.41	.31	1473.
50	5.65	32.88	50	25.94	207.4	1.52	.36	1472.
55	5.44	32.90	55	25.99	203.4	1.62	.41	1471.
60	5.22	32.91	60	26.02	200.4	1.72	.47	1470.
65	5.17	32.92	65	26.03	199.1	1.82	.53	1470.
70	5.05	32.92	70	26.05	197.5	1.92	.60	1470.
75	4.95	32.95	75	26.08	194.8	2.02	.67	1469.
80	4.91	32.95	80	26.09	194.1	2.12	.75	1469.
90	4.81	32.95	89	26.09	193.5	2.31	.92	1469.
100	4.56	33.03	99	26.19	184.8	2.50	1.10	1468.
110	4.54	33.24	109	26.36	168.9	2.68	1.29	1469.
120	4.57	33.42	119	26.49	155.9	2.84	1.48	1469.
130	4.69	33.61	129	26.63	143.2	2.99	1.67	1470.
140	4.61	33.72	139	26.72	134.1	3.13	1.86	1470.
150	4.49	33.79	149	26.79	127.7	3.26	2.05	1470.
160	4.38	33.81	159	26.82	124.9	3.38	2.25	1469.
170	4.29	33.82	169	26.84	123.3	3.50	2.46	1469.
180	4.22	33.82	179	26.85	122.6	3.63	2.68	1469.
190	4.12	33.85	189	26.88	119.5	3.75	2.91	1469.
200	4.08	33.86	199	26.89	118.6	3.87	3.14	1469.
210	4.05	33.88	209	26.91	116.9	3.98	3.39	1469.
220	4.00	33.88	218	26.92	116.3	4.10	3.64	1469.
230	3.95	33.88	228	26.93	115.6	4.22	3.91	1469.
240	3.92	33.90	238	26.94	114.3	4.33	4.19	1469.
250	3.94	33.91	248	26.95	113.6	4.45	4.47	1469.
260	3.91	33.91	258	26.95	113.2	4.56	4.77	1469.
270	3.87	33.91	268	26.96	112.9	4.67	5.07	1469.
280	3.83	33.92	278	26.97	111.6	4.79	5.39	1469.
290	3.79	33.95	288	26.99	109.7	4.90	5.71	1469.
300	3.78	33.94	298	26.99	109.9	5.01	6.04	1469.





## OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 6-204

DATE 9/ 9/77

POSITION 50- .0N, 145- .0W

GMT 23.9

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	13.25	32.61	0	24.52	342.2	.00	.00	1499.
50	5.65	32.88	50	25.94	207.4	1.52	.36	1472.
100	4.56	33.03	99	26.19	184.8	2.50	1.10	1468.
150	4.49	33.79	149	26.79	127.7	3.26	2.05	1470.
200	4.08	33.86	199	26.89	118.6	3.87	3.14	1469.
250	3.94	33.91	248	26.95	113.6	4.45	4.47	1469.
300	3.78	33.94	298	26.99	109.9	5.01	6.04	1469.
350	3.76	34.03	347	27.06	103.9	5.54	7.81	1470.
400	3.74	34.08	397	27.10	100.0	6.05	9.76	1471.
450	3.69	34.13	446	27.15	96.3	6.54	11.89	1472.
500	3.62	34.18	496	27.20	91.7	7.01	14.17	1472.
550	3.53	34.23	545	27.24	88.1	7.46	16.57	1473.
600	3.44	34.26	595	27.27	85.4	7.90	19.12	1473.
650	3.34	34.29	644	27.31	82.3	8.32	21.78	1474.
700	3.25	34.32	694	27.34	79.6	8.72	24.58	1474.
750	3.18	34.33	743	27.36	78.2	9.12	27.49	1475.
800	3.11	34.34	793	27.37	76.9	9.50	30.54	1475.
850	3.02	34.38	842	27.41	73.6	9.88	33.68	1476.
900	2.92	34.41	891	27.44	70.6	10.24	36.91	1476.
950	2.86	34.42	941	27.46	69.4	10.59	40.21	1477.
1000	2.81	34.43	990	27.47	68.7	10.93	43.64	1477.
1050	2.74	34.44	1040	27.49	66.9	11.27	47.18	1478.
1100	2.68	34.46	1089	27.50	65.6	11.60	50.80	1479.
1150	2.61	34.48	1138	27.53	63.2	11.93	54.50	1479.
1200	2.56	34.48	1188	27.53	62.8	12.24	58.28	1480.
1250	2.51	34.49	1237	27.55	61.8	12.55	62.16	1480.
1300	2.46	34.51	1286	27.56	60.5	12.86	66.13	1481.
1350	2.41	34.53	1336	27.58	58.9	13.16	70.16	1482.
1400	2.37	34.52	1385	27.58	58.7	13.45	74.28	1482.

















